# ANNOTATED BIBLIOGRAPHY OF PUBLICATIONS BASED ON RESEARCH SUPPORTED BY THE NORTHERN SCIENTIFIC TRAINING PROGRAM, 1986.

# BIBLIOGRAPHIE ANNOTÉE DES PUBLICATIONS FONDÉES SUR DES RECHERCHES APPUYÉES PAR LE PROGRAMME DE FORMATION SCIENTIFIQUE DANS LE NORD, 1986.

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## FOREWORD

This is the fourth annotated bibliography of publications based on research which has been fully or partly funded by the Northern Scientific Training Program of the Department of Indian Affairs and Northern Development. Its aim is to provide a perspective of the range of research supported by the Program and to promote an exchange of knowledge and collaboration among universities in Canada in the area of northern research. Thus, while the Program was created to assist university students interested in Canada's North in gaining northern knowledge, training and experience, this bibliography demonstrates the significance of northern scholarship resulting from the role of the Program in supporting northern field training of Canadian university students.

It is worth mentioning that this bibliography, as well as the 1983, 1984 and 1985 publications, are being integrated into the Arctic Institute of North America's Arctic Science and Technology Information System (ASTIS). This exciting development will ensure the maximum use and accessibility of the valuable information collected in this and previous bibliographies.

The preparation of this Bibliography has resulted from the collective efforts of several persons. Accordingly, I would like to thank Miss Rhonda Turner and Mr. Mike Hamelin who identified the entries and also did the word processing of the entries, and Dr. John A. Petrolias for his overall coordination to the project.

Harald W. Finkler
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## PRÉFACE

Cette quatrième bibliographie annotée est fondée sur des recherches qui ont été totalement ou partiellement appuyées par le Programme de formation scientifique dans le Nord du Ministère des Affaires indiennes et du Nord canadien. Son but est de fournir une perspective de l'étendue des recherches appuyées par le programme et de promouvoir l'échange des connaissances et la collaboration entre les universités dans le domaine de la recherche nordique. Ce programme a été fondé dans le but d'aider les étudiants universitaires intéressés au Nord à acquérir des connaissances, de l'expérience et de la formation nordiques; d'ailleurs, cette bibliographie démontre l'importance de la science nordique provenant du rôle de soutien joué par le programme à l'égard de la formation sur le terrain des étudiants universitaires canadiens.

Cette bibliographie ainsi que celles de 1983, de 1984 et de 1985 seront intégrées au Système d'information scientifique et technique communément appelée ASTIS de l'Institut arctique de l'Amérique du Nord de l'Université de Calgary. Ainsi, l'information contenue dans ces bibliographies sera plus facilement accessible au public.

La préparation de cette bibliographie est le résultat des efforts de plusieurs personnes. Par conséquent, je désire remercier Mlle. Rhonda Turner et M. Mike Hamelin qui ont identifié les données et qui ont aussi effectué le traitement de texte des résumés, et M. John A. Petrolias pour sa coordination à ce projet.

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# INTRODUCTION

This annotated bibliography comprises the majority of references to scientific papers, seminar or conference presentations, theses, etc. based on projects supported by the Northern Scientific Training Program through the years. All the work, submitted, published or presented in 1986 results, at least partially, from this Program.

Since universities receive block funding that they distribute among student projects, the first section of this bibliography is organized to reflect this procedure, and the entries are listed by universities. These publications, recorded under the institution's name are further classified by alphabetical order of the author and comprise information pertaining to the year of publication, title as well as type of report. Each reference is also followed by an abstract/description of the study. Finally, indexes by author, discipline and fieldwork location complete this report. The categories used for the preparation of the indexes are based on the NST Program database developed by Program management.

The information contained in this bibliography was compiled mainly from the NST Program application forms submitted by universities in 1987-1988. This information was completed through a library search at the departmental library of Indian Affairs and Northern Development, as well as through a follow-up with the university chairpersons of Northern Studies Committees. However, some references remain incomplete. In that regard, we would ask researchers to draw any omission or error to our attention. Any comments or suggestions for this bibliography will also be appreciated.

# INTRODUCTION

La présente bibliographie annotée regroupe la plupart des références à des thèses, écrits scientifiques, communications et autres rapports fondés sur des recherches appuyées au cours des ans par le Programme de formation scientifique dans le Nord. Tous ces travaux déposés, publiés ou présentés en 1986 découlent, du moins partiellement, de ce programme.

Étant donné que les universités agissent comme intermédiaires entre les gestionnaires du programme et sa clientèle étudiante, le corps de cette bibliographie, reflétant ce mode de fonctionnement, est subdivisé en fonction des universités participantes. Les références, ainsi regroupées sous le nom de ces institutions, sont classées par ordre alphabétique d'auteur et comprennent, en outre, l'année de publication, le titre et l'adresse bibliographique. Chaque référence est suivie d'une description ou d'un résumé, du champ de la discipline et du lieu de travail sur le terrain de l'étude. Cette bibliographie est complétée par des indexes par auteur, par discipline et par lieu de travail sur le terrain. Ces deux derniers sont basés sur les catégories adoptées par le Programme de formation scientifique dans le Nord dans ses procédures d'évaluation.

Cette bibliographie a été compilée principalement à partir des informations fournies par les universités dans les formulaires annuels de demande de subvention en 1987-1988. Des recherches à la bibliothèque du Ministère des Affaires indiennes et du Nord, et des démarches auprès des responsables dans les universités ont permis, dans la plupart des cas, de trouver les informations manquantes et ainsi compléter de nombreuses références. Cependant, quelques-unes sont demeurées fragmentaires. À cet égard, il serait grandement apprécié que les chercheurs nous signalent les oublis et les erreurs de cette bibliographie et qu'ils nous fassent part de leurs commentaires.

# I. ANNOTATED BIBLIOGRAPHY BY UNIVERSITY / BIBLIOGRAPHIE ANNOTÉE PAR UNIVERSITÉ

## UNIVERSITY OF ALBERTA

86-001 **BRUNERS, D.** (1986). The Influence on Community Learning Centers on the Development of Yukon Communities. M.A. Thesis.

**ABSTRACT / DESCRIPTION:**
Community Learning Centers, by using primarily local, physical, organizational, and human resources offer educational programs to adults in literacy, academic upgrading, and employment-oriented skills. The overall purpose of this study was to evaluate the influence of the Learning Centers on the community development process. In order to meet this need the key objectives were: 1) To gain an understanding of the scope and nature of the educational programs offered by the centers; 2) To determine whether the goals of the Learning Centers are consistent with those of the communities; and 3) To evaluate the appropriateness of the present programs in meeting the knowledge and skills needs of the community residents, an important basis for the community development process to occur. A number of significant conclusions as to how the Community Learning Centers have aided in the development of Yukon communities can be drawn, based on the data collected. Firstly, resources in the form of adult educational facilities, materials, and instructors have been added to the communities. Economic resources have also been increased, as wages are paid to CLC staff, rent is paid for existing facilities, and students attending academic upgrading are eligible for financial assistance. New capabilities have also been developed by community residents, as CLC staff are trained as adult educators, and students participating in programs offered raise their levels of academic achievement, or acquire new employment related skills. Adults returning to school were viewed as being good role models for the children and youth in the communities, thereby significantly influencing the socialization process of the younger generations. Beliefs about, and attitudes towards the value of education were being improved, as education was being demonstrated as a positive experience by those adults involved in CLC classes. Local advisory committees are becoming more organized and articulate, as the increase of educational opportunities becomes a community-wide goal.

**DISCIPLINE:** Education.

**FIELDWORK LOCATION:** Eight different communities, Yukon.

86-002 **CATTET, M.** (1986). A Comparative Study of the Deposition and Utilization of Fat in Polar and Black Bears. M.A. Thesis.

**ABSTRACT / DESCRIPTION:**
This study is subdivided into three sections; each dealing with

some aspect of the dynamics of the major tissues in bears, especially adipose tissue (fat). Section 1 is aimed atdeveloping rapid, simple techniques for assessing physical condition in polar and black bears. The strength of these techniques will lie in their ability to accurately quantify the stored fat in a bear. The objective of this section is largely applied in that the ability to predict physical condition in bears will provide some expectation of future population levels. The objectives of sections 2 and 3 are moretheoretical in nature and investigate the form and function of the major tissues in polar and black bears from the perspective of their disparate life histories.

Section 2 involves comparing the form and function of fat in polar and black bears. It is based on the assumption that fat can function in a variety of roles in mammals, dependent on their life histories. Because of the unique life history of bears, e.g. prolonged fasting, it is expected that the role of fat as an energy depot is the primary function in most bears. Polar bears are also expected to show a dependence on subcutaneous fat for thermal insulation.

Section 3 looks at sexual size dimorphism in bears from the consideration of bioenergetics. The assumption is made that much of the size differences in bears (females smaller than males) may be explained by the fact that females are faced with greater energetic costs, e.g. through reproduction, than are males. Should this assumption be valid, it is expected that differences between male and female bears will be manifested in the form of their major tissues such that females will show a greater propensity, than males, for depositing body fat.

**DISCIPLINE:** Zoology.

**FIELDWORK LOCATION:** Coral Harbour and Resolute Bay, N.W.T.

86-003 **COURT, G.S.** (1986). Some Aspects of the Reproductive Biology of Tundra Peregrine Falcons. M.Sc. Thesis, Department of Zoology, 121p., illus.

**ABSTRACT / DESCRIPTION:**

A dense, productive population of tundra peregrine falcons (Falco peregrinus tundrius) was studied over five years on a 450 km$^2$ study area located along the northwest coast of Hudson Bay. The number of territorial pairs varied over the years from 17 to 26. A mean internest distance of 3.3 km represents a nesting density for the population that is among the highest on record for the species.

Morphometric and plumage characteristics of adults in the study population suggest variation between populations of F.p. tundrius from further north and F.p. anatum to the south. Nineteen species of birds and three species of mammals were used as prey by the study population; however, in most years the bulk of the diet consisted of six species of birds and one mammal. A dramatic increase in the number of territorial pairs of falcons, coupled with changes in various measures of

reproductive performance, in a year of high microtine rodent abundance suggests that the use of mammals by falcons can be significant in some years.
In most years, successful pairs produced about 35 young, or about two young per occupied territory per year. The sex ratio of nestlings was not significantly different from equality. Despite changes in reproductive performance noted in a year of high prey abundance, there were no significant differences among years in clutch size, brood size, or number of young fledged per territorial pair.

**DISCIPLINE:** Zoology.

**FIELDWORK LOCATION:** Northwest Hudson Bay, N.W.T.

86-004 **DEROCHER, A.** (1986). The Winter Distribution of Polar Bears (Ursus maritimus) in Western Hudson Bay. Research Report.

**ABSTRACT / DESCRIPTION:**
The study of marked bears took place in the Churchill Wildlife Management Unit along the coast of Manitoba during September 1986. A total of 119 bears were captured and over 50% had previous capture histories which will allow an analysis of long-term fidelity to particular locations in the study area. Several of the animals captured were initially captured as young cubs and are now returning as breeding adults permitting a preliminary look at the fidelity of young to their natal area.
A total of 25 subadult bears were captured and represent a substantial increase in our sample of this age class. A total of 12 cubs-of-the-year were captured with their mothers and the long-term monitoring of these animals will yield information on the survival of cubs. Over 100 blood samples were taken and will be analyzed to yield information on the feeding status of individuals and an analysis of testosterone levels in adult males may yield information pertaining to factors that influence the social structure of polar bears while onshore. Hair samples collected are to be analyzed to determine the characteristics of naturally occurring oils in the fur.

**DISCIPLINE:** Zoology.

**FIELDWORK LOCATION:** Western Hudson Bay, Manitoba.

86-005 **DEWAR, P.** (1986). An Exploratory Inquiry Into Traditional Inuit Drum Dancing: Dance Behavior as Culturally Constructed Experience. Report.

**ABSTRACT / DESCRIPTION:**
The researcher's proposal is an exploratory inquiry into Traditional Inuit Drum Dancing in order to understand dance as a culturally constructed experience. The intent is to: 1) identify the context of cultural data for purposes of asking

what is the content or structures of knowledge in communication; and to ask 2) what is the "carrying capacity" in the dance experience or to what extent is communication being realized? The above questions underlie the large aim of understanding traditional drum dancing in comparison with contemporary performance. Dancing may then be viewed as a barometer of changing acculturation forces. Performance at the community hall vividly demonstrated affecting variables in acculturated performance, i.e. space size, accoustical space, age and number attending, changing sex roles, duration of dance, and relationship of dancer and singer. Research findings have directed inquiry into cultural context that asks: 1) how people *build* their world through notions of personhood and social organization; as well as 2) how people *attend* to their world through being trained for sensibilities, i.e. habitual orientations of body, space, time, sound. The "ready stance" or cultural consciousness of dancer determines Real and Ideal factors of the drum dance, as well as stating what is the Dance today.

**DISCIPLINE:** Sociology.

**FIELDWORK LOCATION:** Igloolik, N.W.T.

**86-006** **DOWNIE, S.R. and K.E. DENFORD** (1986). "The Taxonomy of *Arnica frigida* and *A. louiseana (Asteraceae)*". *Canadian Journal of Botany*, 64(7): 1355-1372.

**ABSTRACT / DESCRIPTION:**
The systematic relationships of the *Arnica frigida - louiseana* complex have been evaluated. This complex has been previously recognized as one species. *A. louiseana,* with three infraspecific taxa: subspecies *frigida, griscomii,* and *louiseana*. Morphological, phytogeographical, and cytological data support the recognition of *A. frigida ssp. frigida* and the newly proposed combination *A. frigida ssp. griscomii*. *Arnica louiseana* is also recognized at the specific level. All three taxa have distinct geographic distributions; *A. frigida spp. frigida* is found from eastern USSR, Alaska, Yukon, east to the Mackenzie River, N.W.T., with isolated populations east of the Mackenzie River and in northern British Columbia; *A. frigida ssp. griscomii* is extremely localized in Gaspé, Québec, and in northwest Newfoundland; and *A. louiseana* is restricted to high elevations in the Rocky Mountains of Alberta. The basic chromosome number for this complex is x = 19 with *A. frigida ssp. frigida* 2n = 38, 57, 76, and 95, *A. frigida ssp. griscomii* 2n = 76, and *A. louiseana* with chromosome complements of 2n - 76 and 95. This complex is predominantly apomictic with amphimictic phases in unglaciated Alaska. Disjunct distributions are probably the result of Pleistocene survival in refugia with apomictic phases being responsible for the recolonization of glaciated areas.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** Canadian North and Alaska, U.S.A.

86-007 **DUFRESNE, M.B.** (1986). Origin of Gold in the White Channel Sediments of the Klondike Region, Yukon Territory. M.Sc. Thesis, Department of Geology, 181p.

**ABSTRACT / DESCRIPTION:**
The field relationships and data collected from mineralogical, geochemical and fluid inclusion studies indicate that most of the gold mineralization in the clay-altered White Channel Gravel of the Klondike district was formed directly from Plio-Pleistocene epithermal processes.Post-depositional alteration in the Plio-Pleistocene White Channel deposit is divided into three zones: Bleached zone gravel, Iron zone gravel and altered Footwall zone rocks. Altered White Channel gravel in the uppermost zone (Bleached zone gravel) is white to grey, and contains secondary kaolinite and illite. The weight percentages of $Fe_2O_3$ and LOI are increased, while other major oxides are unchanged relative to unaltered White Channel gravel. Anomalous concentrations of up to 6.55% MnO, 0.73% $P_2O_5$, 490ppm S, 15,900ppm Ba, 1,560ppm As, 45.5ppm Sb and 110ppm Co are present in this zone. Altered Footwall zone rocks below the gravel contact contain secondary minerals such as well crystallized kaolinite, illite and interstratified illite/smectite (or chlorite/smectite). The weight percentage of the major oxides generally decrease and LOI increases with increasing degree of alteration in this zone. Three types of veins were emplaced during the alteration event. Type 1 veins contain quartz and/or chalcedony with vugs, banding, cockade, cockscomb and crustiform textures. Type 2 veins are composed of siderite and quartz, with botryoidal and concretionary growth structures. Type 3 veins consist of microfractures filled with either smectite group minerals and goethite, or amorphous silicates and goethite. Fluid inclusion analyses indicate that these veins were deposited from low temperature (-125°C), low salinity (= 1-2wt.% equivalent NaCl) hydrothermal fluids. The veins contain anomalous concentrations of up to 1.86% MnO, 0.43% $P_2O_5$, 2,800ppm S, 5,410ppm Ba, 97ppm As, 27.9ppm Sb and 280ppb Au.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Klondike Region, Yukon.

86-008 **EDGECOMBE, G.** (1986). Silurian Encrinurid Trilobites From the Mackenzie Mountains, Northwest Territories. Research Report.

**ABSTRACT / DESCRIPTION:**
Study of the Subfamily Encrinurinae from Silurian sections in the Mackenzie Mountains was undertaken to: a) advance description of a significant silicified trilobite fauna commenced by Chatterton and Perry (1983; 1984), b) document

growth series for Silurian encrinurines, describing and interpreting early growth stages and growth allometries, and assessment of heterochronic phylogenetic patterns, c) integrate Mackenzie Mountain species with gobal data to assess supraspecific systematics of the Encrinurinae, d) document phylketic lineages through nearly-continuous stratigraphic sequences, providing insight into evolutionary tempo and mode. Samples collected during the 1986 field season are currently being processed and picked for silicified fossils (including encrinurine trilobites by Edgecombe, other trilobites by B.D.E. Chatterton and P. Tuffnell, and bryozoans by J. Qian). Results of the 1986 field season include: a) collection of silicified fossil-bearing horizons from sections Avl, AV2, AV4, AV5 and AV6 (originally described by Chatterton and Perry). This included recollecting horizons known to contain silicified trilobites to obtain better-preserved material or additional specimens for quantitative study, as well as samples of previously-uncollected levels. The latter have extended the stratigraphic ranges of many taxa. Of particular importance to the writer's study is detailed sampling from late Wenlock-Ludlow horizons through section AV4, through which statistical documentation of a phyletic lineage of the encrinurine trilobite Balizoma has been undertaken.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Mackenzie Mountains, N.W.T.

86-009 **EVANS, K.** (1986). Changes in the Soils and Permafrost in a Pipeline Simulation, Fort Norman, N.W.T. Field Research Report.

**ABSTRACT / DESCRIPTION:**
A reclamation study on a pipeline simulation located 10km north of Fort Norman, N.W.T. was the site for a study of the soils and near-surface permafrost characteristics. The objectives of the summer field season (1986) were to study and quantify the changes (i.e. physical and chemical) that occur in the soils and active layer. Samples from cores, soil pits and permafrost probing were used to quantify the following: 1. soil texture (particle size) changes to 2 metres depth; 2. active layer and near surface permafrost moisture content; 3. the thaw depth characteristics from uncleared (tree canopy undisturbed), cleared right-of-way (tree canopy removed) and in a simulated pipeline trench. Field analysis of the permafrost cores indicates that there is an increase in the moisture and ice contents as depth increases through the active layer and near surface permafrost. However, after passing into the permafrost (circa 80 cm below the ground surface) the ice content of the sample decreased significantly. With respect to texture classification the samples were generally similar (silt loam) until a gravel lens was encountered 2 m below the surface. Analysis of the soil pits indicates that the soils become more alkaline with depth. These results would be expected in

northern soils where black spruce Picea mariana litter produces acidic surface layers. Moisture content increased with depth and proximity to the permafrost table (base of active layer). Texture of the soils in the pits were silt loams.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Fort Norman, N.W.T.

86-010 **FERGUSON, T.** (1986). Traditional Native Resource Management in N.E. Alberta. Research Progress Report.

**ABSTRACT / DESCRIPTION:**
The objective of this research was to examine the record of the relationship between humans and their animal resources in areas which might previously have been the focus of prescribed burning. Two models of hunter-gatherer land-use are of interest here.
The archaeological survey revealed 42 sites of which 33 were contemporary, 8 were 20th century and 1 was a multi-component site with contemporary, 20th century and prehistoric components. Ethnographic interviewing helped to establish the use of these locations. Further interviewing on the use of prescribed burning served merely to confirm last year's findings that only major settlements were the focus of prescribed burning activities.
The archaeological/ethnographic findings indicate that the use of the Mission Farm area is characterized by a mix of foraging/logistic zone characteristics. The variability appears to be primarily related to the type of target species. For large game such as buffalo and moose, the area is used on a day-trip basis; for the procurement of small, abundant game, such as waterfowl and rabbits, major camps have been established. The critique of this land-use model will be expanded through further analysis.

**DISCIPLINE:** Resource Management.

**FIELDWORK LOCATION:** Mission Farm, Salt Flats, Alberta.

86-011 **GREEN, D.E.C.** (1986). The Land Quaternary History of Russell Island, N.W.T. M.Sc. Thesis, Department of Geography, 123p.

**ABSTRACT / DESCRIPTION:**
The late Quaternary history of Russell Island was investigated by mapping its surfacial geology and reconstructing the pattern of postglacial emergence. The surface materials are divided into 10 genetic units. Till covers 53 percent of the island; rock 25 percent; raised marine beaches 20 percent and glaciofluvial, aluvial and other marine sediments cover the remaining area.
Like other parts of the central Arctic, older Quaternary

glaciations are recognized by the widespread dispersal of crystalline erratics northward from the mainland onto Russell Island. During the maximum of the late Wisconsin, the M'Clintock Ice Divide, located immediately west of Russell Island, dispersed ice throughout the central Arctic. Striae indicate that ice flowed eastward from the M'Clintock Ice Divide across Russell Island. This dispersal pattern spread fine-grained calcareous material over the clastic bedrock of the eastern part of the island.

Deglaciation commenced about 11,300 B.P. in the central Arctic. During this time, the centre of ice dispersal shifted with respect to Russell Island, first to the east and then to the south. This resulted in the formation of striae that record deglacial flows which moved north and northwestward across Russell Island. The northwestward deglacial flow was particularly erosive, re-distributing the original carbonate materials and forming features such as roches moutonneés and flutings found on the eastern uplands. The final ice margin of the deglacial flows deposited the Russell Island End Moraine and a kame complex in the central uplands of Russell Island.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Russell Island, N.W.T.

86-012 **HADLEY, M.** (1986). Stratigraphy and Sedimentology of the Upper Devonian Hay River Formation, N.W.T. M.Sc. Thesis.

**ABSTRACT / DESCRIPTION:**

The purpose of this project is to study in detail the stratigraphy and sedimentology of the Upper Devonian Hay River Formation. The Hay River Formation outcrops along the Hay River, upstream from the town of Hay River to a point at the base of Alexandra Falls. The formation consists of a thick sequence of green calcareous shales with thin interbeds of limestone, sandstone and siltstone. These interbeds increase in thickness and abundance toward the top of the formation. Numerous samples from the Hay River Formation and the underlying Slave Point formation were collected. Samples of the Hay River formation were collected from both drill core and outcrop, while samples of the Slave Point Formation were collected from drill core only. These samples will be used for preparation of thin sections for petrographic analysis, for SEM analysis and cathode luminescense. Analysis by these methods will allow determination of the sedimentology of the Hay River Formation.

A total of thirty-two measured sections from both drill cores and outcrop have been documented. These contain information on component lithologies, sedimentary structures, fauna etc. The measured sections will now be used to completely reconstruct the stratigraphy of the Hay River Formation in detail. The feasibility of correlating between subsurface and surface sections can now be determined.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Upper Devonian Hay River Formation, N.W.T.

86-013 **HARWOOD, L.** (1986). Environmental and Ecological Factors Which Influence Ringed Seal Distribution in the Southeast Beaufort Sea During Summer and Fall. Field Research Report.

**ABSTRACT / DESCRIPTION:**
The research examines ecological and environmental factors which influence ringed seal Phoca hispida distribution during the open water period, in the southeast Beaufort Sea. The project involved examination of an existing data base (1980-85), and a field program in 1986. This progress report focuses on the latter, which was completed October 6, 1986. The objectives of the 1986 field effort were to: describe the distribution, abundance, behaviour, species and habitat associations, and group composition of seals throughout the region in general, and in particular, to locate and monitor seal congregation areas; and conduct oceanographic sampling from within and outside seal congregation areas, to describe oceanographic character of these areas and identify potential prey items; and to collect seals from within and outside seal congregation areas, for analysis of stomach contents, age, body and reproductive condition.

**DISCIPLINE:** Zoology.

**FIELDWORK LOCATION:** Southeast Beaufort Sea, Arctic Ocean.

86-014 **JOHNSTON, S.** (1986). Structure and Tectonic History of the Aishihik Lake Area, Southwest Yukon. Field Research Report.

**ABSTRACT / DESCRIPTION:**
Geologic mapping at 1:50 000 scale and sample collection was conducted near Aishihik Lake in southwest Yukon from May 27 through August 17, 1986. An area 80 km long and up to 15 km wide straddling the contact between the Aishihik Batholith in the east, and a crystalline supracrustal sequence in the west, was examined. Orientation data of macroscopic structures and rock samples for petrologic analysis and isotopic dating were collected.

Results indicate that the Aishihik Batholith is allochthonous above Stikinia and is everywhere in fault contact with it. The Aishihik Batholith was emplaced along the Aishihik thrust in Early Triassic or earlier time. Assignment of the Aishihik Batholith to the Late Triassic - Early Jurassic (Tempelman-Kluit and Wanless, 1980) is thus probably incorrect. Isotopic dating currently in progress will attempt to resolve this problem.

If an arc active through the Triassic - Early Jurassic did accrete to North America in the Middle Jurassic, we must look elsewhere for its plutonic roots. It may be that erosion has not yet unroofed these plutons. Alternatively, the concept of an arc active through the Triassic and Early Jurassic may be in need of re-examination. The Aishihik thrust may have resulted from an as yet unrecognized Late Paleozoic tectonic event which affected the Northern Cordillera along several hundred kilometres.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Aishihik Lake, Yukon.

86-015 **KERSHAW, G.P. and L.J. KERSHAW** (1986). "Ecological characteristics of 35-year-old crude-oil spills in tundra plant communities in the MacKenzie Mountains, N.W.T.". Canadian Journal of Botany, 64(12): 2935-2947.

**ABSTRACT / DESCRIPTION:**
In June 1945 the CANOL Crude Oil Pipeline No. 1 from Norman Wells, Northwest Territories, to Whitehorse, Yukon Territory, was abandoned. During its short history, approximately 17 838 500 L of oil was lost through spills and 9 864 400 L was left in the line and storage tanks. Although some burning was done during salvage operations, most residual oil was drained onto the soil surface. Studies in alpine tundra indicate that this oil penetrated up to 60 cm in dry, coarse-textured soils and 8 cm in wet, clay-rich soils. Oil decomposition ranged from complete utilization of n-alkanes to selective metabolism of n-alkines $C_{12}$ to $C_{19}$. Contaminated soils were drier than control soils. This, plus surface blackening and thinning of organic surface layers, resulted in subsurface warming. Floristic similarity coefficients comparing control sites and 27 crude-oil spills varied from 19 to 52. Plant cover was substantially lower on oil spills and in only one community was floristic diversity greater on oil spills than on associated control sites. Dominant colonizers included Cladonia pocillum, Cladonia pyxidata, Rinodina roscida, Carex aquatilis, Carex membranacea, Epilobium angustifolium, Eriophorum angustifolium, Festuca altaica, Juncus albescens, Poa alpina, Salix planifolia, Solidago multiradiata, and Trisetum spicatum.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** Mackenzie Mountains, N.W.T.

86-016 **MASLEN, L.** (1986). The Role of Native Plant Species in Pipeline Revegetation Programmes in Subarctic Ecosystems. Research Report.

**ABSTRACT / DESCRIPTION:**
Specific objectives of this study are threefold:
1. To test, through the planting of seeds and cuttings

obtained from species in the area, the effectiveness of native plant species in active revegetation programmes for pipeline disturbances.
2. To evaluate the importance of on- and off-site propagule sources in the course of natural revegetation of pipelines.
3. To monitor the short-term results of a native species revegetation programme on the ground thermal regime of pipeline trenches.
There was an assessment of native plant species for revegetation of pipeline rights-of-way. Seeds and berries were collected from plants that have proven successful colonizers on local 13-year-old seismic line disturbancdes. Species include: shrubs - Empetrum negrum, Arctostaphylos rubra, Ledum groenlandicum, Vaccinium uliginosum, and Betula glandulosa, and herbs- Eriophorum vaginatum, Carex membranacea, Arctagrostis latifolia, Epilobeum angustifloium, Calamagrostis canadensis, and Sausurrea angustifolium.

**DISCIPLINE:** Resource Management.

**FIELDWORK LOCATION:** Fort Norman, N.W.T.

86-017 **MORRIS, T.** (1986). Quaternary History and Geomorphology of Southern and Central Prince of Wales Island, N.W.T., Canada. Field Research Report.

**ABSTRACT / DESCRIPTION:**
Prince of Wales Island is located in Canada's central Arctic. During the early 1960's, Craig (1961) and Craig and Fyles (1962) noted two prominent drumlin and fluting fields; one orientated in a southeast to northwest direction, the second west to east, cross-cutting the first. They originally suggested that the northwestward orientated drumlin and fluting field was formed when ice last advanced from a large, single ice dome centered over Hudson Bay. Subsequently, as the ice retreated back to Hudson Bay, there was a brief period of drawdown flow into Peel Sand. This formed the eastward orientated drumlin and fluting field.
Recently, Dyke (1983,1984) proposed that the northwestward orientated drumlin and fluting field was formed during a much earlier period of glaciation. The eastward orientated drumlin and fluting field formed during the last glaciation, not from a single dome of ice over Hudson Bay, but a smaller ice divide centered over the M'Clintock Channel.
To test which of these two hypothesis are correct, the time of when each event occurred is required. If hypothesis one is correct, then a young age for eastward orientated drumlin and fluting field is expected. The opposite, if hypothesis two is correct. Hence, the first objective is to determine the age of the eastward orientated drumlin and fluting field.
The second objective concerns the style and timing of the deglaciation of the study area. The third objective is to define the extent and distribution of the eastward dispersal

train(s). The fourth objective is to gain a better understanding of the local post glacial emergence.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Prince of Wales Island, N.W.T.

86-018 **RICHARDS, J.H. and L.C. BLISS** (1986). "Winter Water Relations of a Deciduous Timberline Conifer, *Larix Lyallii Parl*". *Oecologia* (Berlin) 69: 16-24.

**ABSTRACT / DESCRIPTION:**
The degree of winter desiccation resistance exhibited by *Larix lyallii* Parl. was assessed by determination of water potential components and content of buds, xylem pressure potential of twigs and amount of damage through winter at timberline in the Rocky Mountains of Canada. Comparative measurements were made on sympatric evergreen tree species to evaluate differences in winter desiccation avoidance and tolerance between evergreen and deciduous trees. Total and osmotic plus matric potentials of *L. lyallii* buds were losest in December (-5.0 to -5.3 MPa and -6.6 to -7.0 MPa, respectively) when temperatures were lowest. Bud and water content increased in late winter while xylem of twigs continued to decline until March. The buds were isolated from the xylem from October through February, as indicated by large differences in water potential between the two organs during this time. Buds thus avoided desiccation as water was lost from the twigs. At the same time the buds were tolerant of very low Y and Y xxxx, a characteristic which is an important component of freezing damage resistance. Desiccation damage to buds of *L. lyallii* was much less than that to buds of similar-sized nearby trees of *Abies lasiocarpa*, although Yxylem of both species was similar. The deciduous habit apparently confers a significant advantage to *L. lyallii*, which dominated the upper timberline sites, in reduced susceptibility to winter desiccation damage. Other deciduous timberline species might also benefit from this advantage where winter conditions are desiccating.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** Rocky Mountains, Yukon.

86-019 **SAVELLE, J.M.** (1986). *Mobility and Subsistence - Settlement: An Archaeological Example for the Central Canadian Arctic*. Ph.D. Thesis, Department of Anthropology, 369p., 23 plates.

**ABSTRACT / DESCRIPTION:**
Hunter-gatherer subsistence-settlement systems are considered in terms of two contrasting but complimentary mobility strategies: residential and logistical. High residential and low logistical mobility is characteristically associated with

foraging subsistence settlement systems, while high logistical and low residential mobility is characteristically associated with collecting systems. The relative degree to which any given hunter-gatherer system adopts these two mobility strategies is suggested to be related primarily to the resource procurement schedule which, utilizing models developed through optimal foraging and game theory, is in turn suggested to be directly related to the nature of the resource base given a requisite technology. Specifically, collecting systems will be favoured when there is a potential for a disproportionately higher return of one or a few resources, typically accompanied by storage. Foraging systems, on the other hand, will be favoured when a wider number of 'lower return' resources are available.

**DISCIPLINE:** Anthropology.

**FIELDWORK LOCATION:** Central Canadian Arctic.

86-020 **SMITH, S.** (1986). Value and Compensation: Subsistence Production in the Dene Economy, Fort Good Hope, N.W.T. M.A. Thesis, Department of Anthropology, 101p.

**ABSTRACT / DESCRIPTION:**
Ascribing a cash value to the product of the bush activities of the Dene of the Northwest Territories of Canada resulted from a need to demonstrate the significance of these activities in the face of increased northern development.
A framework for assessing the significance for the bush-subsistence sector of the Dene economy is proposed in the form of a political economy/mode of production analysis. The merits of this approach are that it enables the inclusion of aspects that were designated as intangibles in previous studies through its attention to the social relations of production; it is concerned in part with the historical background and thus affords a broader perpective than the limited view of previous valuation studies; and it is possible to analytically separate the cash-market sector from the subsistence sector of the Dene economy, in order to examine the interrelationships between the two. Finally, the ability of compensative and mitigative measures to ensure the continued ability of the Dene to conduct their way of life is questionable. Due to the tendency of compensative measures to deal only with specific, fixed, and finite assets, compensation is inappropriate for protecting the fluctuating, systemic, and social resources at stake in subsistence production. Ultimately, it is only through the political power to control land-use activities on the land that they require that the Dene way of life, along with their ability to guide and change it, may be protected.

**DISCIPLINE:** Anthropology.

**FIELDWORK LOCATION:** Fort Good Hope, N.W.T.

86-021 **STENTON, D.R.** (1986). "A Soper Record Cairn from Baffin Island, N.W.T.". Arctic 39(1): 92-94.

**ABSTRACT / DESCRIPTION:**
Two documents were recovered from a cabin located at the northern extremity of Netillary Lake, Baffin Island. They record the details of J. Dewey Soper's winter expedition to Foxe Basin in 1926 and the travel itinerary of an Inuit hunting party.

**DISCIPLINE:** Anthropology.

**FIELDWORK LOCATION:** Baffin Island, N.W.T.

86-022 **STENTON, D.R.** (1986). Prehistoric Inland Adaptations in South-Central Baffin Island, N.W.T. Field Research Report.

**ABSTRACT / DESCRIPTION:**
This report summarizes anthropological field research conducted in three communities in southern Baffin Island from May 29 to July 3, 1986. Interviews held with a total of 17 informants from the three settlements were very productive, providing valuable and detailed information concerning the role of the interior of Baffin Island to the traditional Inuit economy. Although the information recovered has not yet been fully analyzed, it is clear that land use practices have changed significantly during the last century. This is suggested by behavioural differences identified in the testimony of the very oldest informants (100 +) and younger individuals (average age between 50 and 60 years). Although variable resource (i.e. caribou) density and distribution appears to be a primary factor determining behaviour, it is also evident that increased and sustained culture contact with non-Inuit influenced traditional land use patterns. Identifying and understanding the role of these and other factors which will emerge will be an invaluable aid to understanding the relationship between coastal-marine and terrestrial adaptations, and interpreting pattern change during the prehistoric period.

**DISCIPLINE:** Anthropology.

**FIELDWORK LOCATION:** South Central Baffin Island, N.W.T.

86-023 **STEWART, T.G. and J. BEDNARSKI** (1986). Basal Crevasses and Folded Foliation Along the Margin of a Subpolar Glacier. Paper, American Quaternary Association, Ninth Biennial Meeting, 2-4 June, 1986, University of Illinois, Champaigne-Urbana.

**ABSTRACT / DESCRIPTION:**
In Clements Markham Inlet, N. Ellesmere Island, Canada, the Dagger glacier (unofficial name, $82^{o}36.5'$N, $69^{o}16'$W) flows over

an ice fall and terminates ca. 200m down-ice. Three fold types were observed in the glacier. 1) An individual ca. 1m thick recumbent fold at the base of the ice fall immediately down-ice of the basal crevass. 2) Incorporated outwash materials (as indicated by included plant remains) form individual debris 'clots' or augens that are ca. .5-1.5m in diameter. Glacial flow has 'smeared' material from these clots producing attenuated debris bands and these bands have been folded and refolded around the debris clots forming several larger-scale closed-eye structures. In the exposed cross section the debris bands and debris clots produce a distinctly lens-shaped horizon. Within and at the margins of this lens-shaped horizon the debris bands have extremely sharp hinges. Including the adjacent debris-free ice this fold zone is ca. 2m thick and extends ca. 10m laterally before the folded foliation is no longer discernable. 3) At several sites horizontal debris-rich bands are compressed forming a series of en enchelon, < 1m high, inclined folds often superimposed on the flanks of larger folds.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Clements Markham Inlet, Ellesmere Island, N.W.T.

86-024 **STEWART, T.G. and J. ENGLAND** (1986). "An Early Holocene Caribou Antler from Northern Ellesmere Island, Canadian Arctic Archipelago". Boreas, 15: 25-31.

**ABSTRACT / DESCRIPTION:**
During the last glaciation of northern Ellesmere Island many areas remained ice-free. A caribou antler from deglacial-marine sediments in Clements Markham Inlet dates 8,415 ± 135 B.P. (S-2501). If locally derived it places caribou at the northern limit of their contemporary range at the onset of delaciation in this area. Immediately to the south, on the Hazen Plateau, ice remained at its limit until c. 8,000 B.P. Therefore, this antler may indicate the presence of caribou during full glacial time.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Ellesmere Island, N.W.T.

86-025 **THERRIEN, B.** (1986). Silurian Trilobite Biofacies of the Mackenzie Mountains. Progress Report.

**ABSTRACT / DESCRIPTION:**
The study's research objectives are:
1. to assess the extent to which native representatives on resource management boards are able to influence board decisions;
2. to assess the importance of the role of boards in the

overall wildlife and resource policy process. The technical resources available to boards to exercise their mandate and their influence on the overall policy process, of which they are only a part will be evaluated;
3. to assess the importance of native representatives on resource management boards to the advancement of native interests;
4. to document the early history of the Porcupine Caribou Management Board.

**DISCIPLINE:** Resource Management.

**FIELDWORK LOCATION:** Mackenzie Mountains, N.W.T.

## UNIVERSITY OF CALGARY

86-026 **PEARCE, C.M.** (1986). The Distribution and Ecology of Shoreline Vegetation in the Mackenzie Delta, N.W.T. Ph.D. Dissertation.

**ABSTRACT / DESCRIPTION:**

This research analyzed the distribution of the shoreline vegetation on the Mackenzie Delta and the dynamics of plant colonization and early succession on mudflats. The shoreline vegetation was described within a system of ecological land classification which related the distribution of plant associations to macroclimate and the fluvial regime. The Low Arctic and High Subarctic Ecoregions distinguished vegetation patterns related to climate. Ecosites -- point bars, levees, sand plains, lakeshores, deltas, and shoals -- identified landforms resulting from fluvial processes on the delta and the degree of the relationship between delta hydrology and the landform. Eight major shoreline associations were studied: sparsely vegetated mudflats with a mix of plant species colonizing new land adjacent to channels and lakes; emergent communities dominated by Equisetum fluviatile, E. arvense, Arctophila fulva, and Carex aquatilis, and low shrub associations dominated by Salix alaxensis, S. pulchra, and S. richardsonii.

**DISCIPLINE:** Environmental Sciences/Ecology.

**FIELDWORK LOCATION:** Mackenzie Delta, N.W.T.

## CARLETON UNIVERSITY

86-027 **ADAMYK, M.** (1986). The Yukon Native Development Corporation and Renewable Resources. Northern and Native Studies Seminar, Carleton University, September 22, 1986.

**ABSTRACT / DESCRIPTION:**
As a southern Canadian perspective on northern issues, this analysis combines a structural level investigation of northern economic transformations with an examination of local and regional responses to gain additional insights into northern aboriginal reactions to the process of industrialization.
By positioning the North in the world economy and identifying traditional patterns of northern aboriginal behaviour, well documented phenomena such as: high aboriginal turnover rates in the mining industry, high school-leaving rates the persistence of subsistence activities, are classified as northern aboriginal resistance to the structural uncertainties and alien assumptions that motivate industrial production.
Finally, the emergence of northern Native Development Corporations will be considered as an evolutionary form of resistance aimed at actively influencing the forces that dominate northern development.

**DISCIPLINE:** Resource Management.

**FIELDWORK LOCATION:** Whitehorse, Yukon.

86-028 **MAILHOT, C.** (1986). Representivité Inuit au services des postes de gestion dans les Territoires-du-Nord-Ouest: de la théorie à la pratique. Rapport.

**RÉSUMÉ / DESCRIPTION:**
La population Inuit est jeune, la moitié d'entre elle a moins de 20 ans; cela signifie que chaque année un bon nombre de jeunes joignent le marché du travail. Cette donnée est importante, car bien que le chômage soit pratiquement inexistant dans les communautés Inuit depuis plus d'une génération, son taux actuel est de beaucoup supérieur à la moyenne nationale et celui-ci ne cesse d'augmenter.
Si les Inuit ne se trouvent pas de travail, ce n'est pas seulement à cause d'une penurie d'emplois dans leurs communautés mais principalement à cause du manque de qualifications de la main d'oeuvre. En effet, très peu d'Inuit ont complété leurs études secondaires et les emplois qu'ils peuvent assumer se situent franchement à la base de la hiérarchie du pouvoir décisionnel. Par contre les gouvernments fédéral et territorial, les principaux employeurs dans le nord, font appel à la main-d'oeuvre qualifiée du Sud. Afin de remédier à cette situation, les deux paliers gouvernementaux ont mis sur pied de nombreux programmes de formation mais ceux-ci, selon l'avis des organismes Inuit, sont loin d'être

suffisants et adéquats. Pour qu'ils soient efficaces, il est essentiel de développer une stratégie d'emploi à long terme en tenant compte de la réalité culturelle des Inuit. Bien que la collaboration entre les organismes gouvernementaux et Inuit qui s'amorce semble très prometteuse, les résultats obtenus jusqu'à maintenant ne sont pas encore probants. En attendant, la demande de main-d'oeuvre d'Inuit qualifiés se fait de plus en plus pressante afin de pouvoir répondre aux critères d'équité en matière d'emploi et de représentativité de la population Inuit.

**DISCIPLINE:** Sociologie.

**LIEU DE TRAVAIL SUR LE TERRAIN:** T.N.-O.

**86-029** **NEWBERRY, N.** (1986). The Rationale for Implementation of a Lifeskills Program for Schools in the Baffin Region. M.A. Thesis.

**ABSTRACT / DESCRIPTION:**
The transition for Inuit from a nomadic life hunting wild animals to entering the urban wage economy has been rapid. Unfortunately the schools have not equipped the young adequately for the changes, and government economic policy has not provided sufficient regular employment to ensure a viable alternative to what existed traditionally. Statistics from Broughton Island reflect a fact that is current in all Baffin communities; the growing number of unemployed and socially ill-equipped youth. The implementation of a regular Lifeskills program throughout all schools in the region would be a first step towards helping youth better prepare for their role in adult society.

**DISCIPLINE:** Education.

**FIELDWORK LOCATION:** Baffin Region, N.W.T.

**86-030** **STOKER, K.** (1986). Thermal and Geotechnical Properties of Soils in the Schefferville Area. B.A. Thesis.

**ABSTRACT / DESCRIPTION:**
An analysis of the temperature regime of a permafrost soil near Schefferville, Québec has been done. The Hematite Lake experimental site involved has alpine tundra vegetation and is underlain by permafrost. As a result of its coarse grain size and mineralogical nature, the active layer has rather unique thermal properties. Consequently, temperatures are influenced much more by water movement than by the diurnal cycle. To study the subsurface, temperature as well as moisture measurements were obtained. The analysis compares the actual heat flow regime with the heat conduction equation emphasizing anomalous 'diffusivities' from which the type of heat transfer can be drawn. This technique is backed up by means of

estimating thermal conductivity of the soil. Hereby, the latter is calculated using Johansen technique, which is adjusted according to local mineralogy. Data were obtained using two thermocables and a neutron probe to establish some of the thermal and hydrologic properties, respectively. It may be concluded that the unusual soil properties significantly dampen the soil temperature profile thus affecting the permafrost table.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Schefferville, Northern Québec.

86-031 **MacKAY, R. and M. FASIOLO** (1986). An Investigation of Writing Across the Curriculum in an Eastern Arctic School. Paper, National Student Conference on Northern Studies, Ottawa, November 17-18, 1986.

**ABSTRACT / DESCRIPTION:**
This pilot study describes the various roles that writing appears to play in the education of Inuit secondary school students in the Eastern Arctic. The researcher, as participant observer, attended an entire week each of classes with grade 7 and with grade 9 students in a Baffin Region school. All writing tasks demanded of the students were noted and a broad sample of the students' written responses to these demands were obtained. From this, a detailed description of the types of writing tasks set, the guidance given to the student and the students' performance of the tasks was produced. All teachers of these two grades were interviewed as were a broad sample of students from each of the two grades, to obtain their perceptions of the function and value of the writing tasks set. The results of the interviews along with the descriptive data allowed the researchers to examine and try to explain discrepancies between the teachers' intentions underlying the use of writing tasks as part of the educational process and the students' actual experience of responding to these tasks. A tentative explanation (small 't' theory) is offered to account for the problems contributing to the relatively poor performance of Inuit secondary school students receiving their education through the medium of English, their second language.

**DISCIPLINE:** Education.

**FIELDWORK LOCATION:** Baffin Island, N.W.T.

86-032 **SHOULDICE, M.** (1986). "Making Education Work for Inuit in the Modern World". Inuktitut Magazine, Summer 1986, p. 56-68, DIAND.

**ABSTRACT / DESCRIPTION:**
Many things have changed for Inuit. In the past twenty years, in particular, Inuit virtually everywhere have come to live in communities and have altered their hunting patterns for a more sedentary existence. One introduced element that has had a tremendous impact on social change is the system of formal education. Ironically, it has also become the key to the future for Inuit as they define what it is to be an "Inuk in a modern setting." In recent years, some areas of the northern economy have been developing that require new skills which are still dependent upon traditional knowledge. For example, tourism has created a need for outfitters and guides who must have knowledge of the land as well as basic business expertise.

Radio and television have related employment for those who have bilingual communications skills. Increased communications have also called for more training in interpreting, translating and developing the Inuktituk language to describe modern technology, services, legal concepts, medical terminology and so on.

Today, alternatives to the formal education system are being used to teach culture. An example is the museum-based cultural teaching centre, Inuit Silattuqsarvingat, a project of the Inuit Cultural Institute in Eskimo Point in the Keewatin. This is being designed to deliver cultural/educational programs throughout northern communities. As well, the education system itself is preparing more extensive cultural components for the day school system in an attempt to create a bi-cultural educational base for children.

In general, the direction of education today is to help young people avoid the trade-off they face when they lose their identity as Inuit in a modern North. Too often they have had to give up their traditional background to succeed in the contemporary economy. These new directions will allow them to incorporate both the skills and language of their parents in the business place.

**DISCIPLINE:** Education.

**FIELDWORK LOCATION:** Eskimo Point, Keewatin, N.W.T.

## LAKEHEAD UNIVERSITY

86-033 **BURAK, J.P.** (1986). Shallow Downslope Movements Due to Drained Cyclic Pore Pressure Changes. M.Sc. Thesis.

**ABSTRACT / DESCRIPTION:**
This thesis investigates the effect of cyclic pore pressures on soil with regards to its deformation behaviour. The observed behaviour is then correlated to actual field conditions in which shallow, slow ground movements have been measured. The effect of fluctuating porewater conditions on slow ground movements has been studied by subjecting triaxial specimens to cyclic pore pressure changes. These changes were applied through a back pressure burette with full drainage being permitted throughout the duration of the tests. The tests were performed at constant total loads, and a total of 11 tests were completed. Results from the laboratory tests showed permanent changes in volume and shape during the cyclic pore pressure changes. The deformation rates reached approximately constant values in the range of 30 cycles and were dependent on the magnitude of the pore pressure changes. The strain rates also increased linearly with an increase in the ratio Au/Auf. Correlations between the laboratory test results and the field soil behaviour show that the displacements pattern can be predicted from the cyclic pore pressure changes. The new analysis, however, seriously underpredicts the downslope movements, as the magnitude of the field displacements is much larger than those predicted.

**DISCIPLINE:** Engineering.

**FIELDWORK LOCATION:** Bluefish Lake, N.W.T.

**86-034** **BÉGIN, C. et L. FILION** (1986). Utilisation de la dendrochronologie dans l'étude des mouvements de masse. Colloque sur les interrelations entre la biologie et la géographie, ACFAS, Université de Montréal, 12-16 mai, 1986.

**RÉSUMÉ / DESCRIPTION:**
La dendrochronologie est une technique qui favorise l'intégration de l'écologie végétale et de la géographie physique. Elle constitue un outil approprié permettant de situer précisément dans le temps l'activité de certains processus morphogénétiques en milieu forestier. Dans le cas des études sur les mouvements de masse, l'analyse dendrochronologique a été appliquée aux mouvements affectant, soit le substrat en roche meuble (glissements de terrain, éboulis, solifluxion), le substrat neigeux (avalanches, dynamique des combes à neige) ou tourbeux (dégradation des palses). La technique consiste à utiliser les arbres comme témoins des conditions d'instabilité en interprétant les différentes réponses, morphologiques ou anatomiques, enregistrées par les individus à la suite de certains événements. Ces réponses concernent, par exemple, la formation de bois de réaction ou de cicatrices, ou encore un changement dans la croissance radiale des arbres. A l'aide de différents exemples, nous tentons de montrer que la dendrochronologie est une technique permettant non seulement de dater des phénomènes, mais également de les inscrire dans leur dynamique globale à plus ou moins long terme.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Nord canadien.

**86-035** **BÉGIN, Y.** (1986). Dynamique de la végétation riveraine du Lac à l'Eau-Claire, Québec subarctique. Thèse de doctorat, Département de phytologie, mars 1986, 128 p.

**RÉSUMÉ / DESCRIPTION:**
Cette étude propose une reconstitution de l'évolution récente des formations végétales riveraines du Lac à l'Eau-Claire (56°N. 75°O) (1) par une description de la géomorphologie et de la végétation littorale, (2) par une analyse de la dynamique des populations arbustives influencée par les perturbations géomorphologiques, et (3) par l'analyse dendrochronologique des dommages occasionnés aux végétaux ligneux par les vagues et les poussées glacielles au cours des deux derniers siècles. Les résultats indiquent une augmentation de l'importance des dommages causés à la végétation au cours du XXe siècle, attribuable à l'incidence de crues majeures du lac reliées à une augmentation de la précipitation nivale accompagnant une amélioration thermique.

**DISCIPLINE:** Botanique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Lac à l'Eau-Claire, Québec nordique.

86-036 **BÉLISLE, L.** (1986). Étude des caractéristiques écologiques de Salix uva-ursi en site exposé. Thèse de maîtrise, Département de Phytologie, novembre 1986, 52 p.

**RÉSUMÉ / DESCRIPTION:**
Salix uva-ursi Pursh est une salicacée qui croît en abondance sur les sommets venteux de la région de Kuujjuarapik, au Nouveau-Québec. Elle est plus rare dans les sites où les conditions sont moins sévères. La distribution du saule est reliée à la disponibilité des sites favorables à la germination. L'absence de distinction entre les individus issus de graines et ceux qui sont des marcottes ne permet pas d'approfondir la dynamique de la population par l'étude des structures d'âge. L'architecture de l'espèce varie selon les milieux où elle pousse: elle forme des tapis denses dans les sites exposés mais possède une allure plus ouverte dans les dépressions. De plus, la longueur des pousses diminue de la périphérie en allant vers le centre. Il n'y a pas de variations de l'allocation de la biomasse entre différents habitats. La plasticité du saule constitue un avantage dans l'exploitation de différents habitats.

**DISCIPLINE:** Botanique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Poste-de-la-Baleine, Québec nordique.

86-037 **BÉLISLE, L. et L. MAILLETTE** (1986). Architecture d'un saule nain Salix uva-ursi de la toundra subarctique du Nouveau-Québec. Affiche, Colloque, ACFAS, Université de Montréal, 12-16 mai, 1986.

**RÉSUMÉ / DESCRIPTION:**
Salix uva-ursi est une espèce arctique alpine à croissance prostrée et qui forme souvent des tapis denses. Dans la région de Kuujjuarapik, au Nouveau-Québec, l'espèce se retrouve sur des collines granitiques. Dans ces milieux, le passage d'un site à forte exposition à un autre plus protégé (dépression plus ou moins grande) s'accompagne d'une augmentation de la couverture végétale, ce qui affecte la croissance du saule aux niveaux du nombre et de la longueur des ramifications. La marge des plants serait affectée par l'abondance relative d'autres espèces végétales tandis que le centre serait influencé par les conditions microclimatiques. La méthode de Horton et la formule de Motomura ont été utilisées pour calculer les rapports de bifurcation. Ces rapports sont plus faibles dans les grandes dépressions que dans les petites dépressions ou les sites exposés. Les segments terminaux des

plants sont plus longs dans les grandes dépressions que dans les petites ou les sites exposés. Les segments terminaux montrent aussi des différences selon la position; ils sont plus longs à la marge qu'au centre des plants. Il existe donc une zonation à l'intérieur des saules; la marge correspond à une zone de colonisation et le centre, à une région de persistence. Les saules des sites très exposés sont plus touffus que ceux des grandes dépressions à cause du rapport de bifurcation plus élevé et des longueurs des segments plus faibles. Cette forme en coussin permet l'établissement d'une couche limite qui diminue les pertes en chaleur et en eau. La plasticité phénotypique de Salix uva-ursi lui permet donc de se maintenir en site exposé.

**DISCIPLINE:** Botanique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Kuujjuarapik, Nouveau-Québec.

**86-038** **CAYOUETTE, J.** (1986). Répartitions géographiques particulières de certains taxons vasculaires au Nouveau-Québec. Colloque, ACFAS, Université de Montréal, 12-16 mai, 1986.

**RÉSUMÉ / DESCRIPTION:**
Un faible pourcentage de la flore vasculaire du Nouveau-Québec comprend des taxons répartis principalement dans le nord-ouest américain (Arctique, Béringie, Cordillière). Au Nouveau-Québec et au Labrador, ces plantes ont une distribution restreinte: 1) Ungava arctique seulement (ex. Salix alaxensis, Oxytropis maydelliana), 2) Sud de la Baie d'Hudson et/ou Baie James (Castilleja raupii, Pedicularis sudetica), 3) zone restreinte au Haut-Boréal et suivant sensiblement la limite des arbres (Antennaria isolepis, Carex lapponica, C. rotundata). Alors que la recolonisation post-glaciaire des éléments des deux premiers groupes semble assez facile à reconstituer, celle des taxons du troisième groupe pose des problèmes en raison de leur répartition est-ouest discontinue.

**DISCIPLINE:** Botanique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Ungava, Baie d'Hudson, Nouveau-Québec.

**86-039** **DESHAYE, J. et P. MORISSET** (1986). Diversité floristique d'un archipel hémiarctique en relation avec la surface et la diversité en habitats. Colloque, ACFAS, Montréal, 12-16 mai, 1986.

**RÉSUMÉ / DESCRIPTION:**
La flore vasculaire d'un archipel Hémiarctique maritime (golfe de Richmond, Nouveau-Québec) est étudiée en rapport avec la surface des îles et leur diversité en habitats mesurée empiriquement. Il en résulte principalement que (1) la surface

et la diversité en habitats contribuent de façon égale à expliquer la richesse floristique de l'archipel, mais que (2) à surface égale, une faible diversité en habitats diminue la richesse floristique des îles. Le modèle S-logA décrit mieux, au niveau de l'archipel, la relation entre le nombre d'espèces et la surface que le modèle logS-logA. Ce phénomène semble principalement causé (1) par la relative instabilité écologique de l'archipel (relèvement isostatique intense) et (2) par la nature de la diversité floristique de l'hémiarctique.

**DISCIPLINE:** Botanique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Golfe de Richmond,
Nouveau-Québec.

86-040 **DESPONTS, M. et J.P. SIMON** (1986). Variabilité génétique de l'épinette noire en milieu hémiarctique. Affiche, Colloque, ACFAS, Montréal, 12-16 mai, 1986.

**RÉSUMÉ / DESCRIPTION:**
La variabilité génétique de l'épinette noire (Picea mariana (Mill)BSP) a été évaluée par électrophorèse isoenzymatique sur gel d'acrylamide. Cinq populations insulaires du Lac à l'Eau-Claire (56°15'N;74°30'O), dans la toundra forestière du Nouveau-Québec, ont été analysées. Le pourcentage de loci polymorphes (P=0.80) et l'hétérozygosité moyenne (H=0.35) sont supérieurs aux valeurs obtenues pour la plupart des espèces. L'ensemble des 18 loci polymorphes indiquent un excès d'hétérozygosité pour toutes les populations. Par ailleurs, les sites sont faiblement différenciés et on note une homogénéité allélique entre ceux-ci. Le patron des similarités génétiques n'est pas correlé aux distances géographiques. Il nous apparaît surtout relié au niveau de maturité des populations, les plus âgées ayant tendance à montrer une variabilité accrue. Nos résultats nous suggèrent donc que l'épinette noire a la capacité de maintenir en milieu marginal un niveau de variabilité élevé et d'éviter l'isolement génétique.

**DISCIPLINE:** Botanique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Lac à l'Eau-Claire,
Nouveau-Québec.

86-041 **DIONNE, J.C. et Y. MICHAUD** (1986). "Note sur l'altération chimique au golfe du Guillaume-Delisle, Hudsonie". Revue de Géomorphologie dynamique, 35: 81-92.

**RÉSUMÉ / DESCRIPTION:**
Au golfe de Guillaume-Delisle (56°08'N), sur la côte orientale de la mer d'Hudson, le front des grandes cuestas côtières est découpé de plusieurs paliers dont certains composés de dolomie contiennent des veines de quartz et des nodules ou concrétions

de chert ou de quartz. Depuis la déglaciation, ces derniers ont été déchaussés par la dissolution. Le déchaussement moyen est de 5 cm. Le site étudié se trouvant à 150 m d'altitude et étant émergé depuis environ 6500 ans, un taux moyen d'abaissement de la surface de 6mm/1000 ans a été calculé. Ce taux tient compte du déchaussement glaciaire préalable d'environ 1 cm. Des formes mineures de corrosion existent aussi dans les grès arkosiques et dans le basalte de Pachi. L'altération chimique dans un milieu périglaciaire côtier humide comme celui de la mer d'Hudson joue un rôle complémentaire à l'altération physique ou mécanique prédominante des versants rocheux dénudés.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Golfe de Guillaume-Delisle, Nouveau-Québec.

**86-042** **DRITSAS, P.** (1986). Plants in Inuit Culture: The Ethnobotany of the Iglulingmiut. M.Sc. Thesis, Department of Anthropology.

**ABSTRACT / DESCRIPTION:**

The material I collected for the present study provided me with evidence in support of the criticism addressed to Berlin's theory by scholars like Eugene Hunn and Robert Randall. Though I adopted their framework in defining the Iglulingmiut ethnobotany, I felt I had to go a step further and resort to the general ideological structure in order to understand what plants mean to the Inuit.

To begin with, the principle of minimal selectivity does not apply to the Inuit in regard to plants. Though the resourcefulness and pragmatism of the Inuit are clearly manifest in their relation to their botanical environment, it is the general world view and ideology that determine and explain the utility, knowledge and perception of that part of reality. I have shown that plants are classified according to utility and morphological complexity (not discontinuity) and that attention focusses on parts of plants and stages of growth.

After proposing an alternative ethnobotanical model, I set out to situate the system within the total cultural context to account for one of the most interesting aspects that came out early in the investigation: that as resources from the ground, plants belong to an "earth category". But unlike rocks and excrements, plants grow and that feature sets them apart as a symbolically meaningful category. They are signs that the earth is alive and I have suggested a comparison of plants with the symbolic salience of hair and nails that also stand for the Inuit half way between the living and the dead.

**DISCIPLINE:** Anthropology.

**FIELDWORK LOCATION:** Igloolik, N.W.T.

86-043 **DUMAS, P.** (1986). Biologie des populations de Rubus chamaemorus L. (chicouté) au lac à l'Eau-Claire, Québec nordique. Thèse de maîtrise, Département de phytologie, septembre 1986, 51 p.

**RÉSUMÉ / DESCRIPTION:**
Rubus chamaemorus L. (chicouté) est une espèce herbacée pérennante dioique de distribution circumboréale. Elle se propage surtout végétativement au moyen de rhizomes et produit des petits fruits comestibles. La biologie des populations de la chicouté a été étudiée pendant deux étés au Lac à l'Eau Claire, Québec nordique, dans trois sites tourbeux (pessière, muscinaie et tourbière) et deux lichénaies. Les aspects abordés comprenaient les patrons d'allocation de la biomasse, le poids sec individuel des rameaux aériens, la démographie des rameaux aériens et des fleurs et la ségrégation spatiale des sexes. Des différences entre les sites ont été observées pour la biomasse souterraine, plus élevée dans les sites tourbeux. Par contre, le patron d'allocation de la biomasse, caractérisé par une proportion souterraine d'environ 95% et un effort reproducteur sexuel inférieur à 3% de la biomasse épigée, ne change pas d'un site à l'autre. Les variations temporelles de la biomasse épigée, de l'allocation de la matière sèche et du poids sec individuel des rameaux aériens traduisent la phénologie de l'espèce: émergence puis allongement des rameaux aériens, floraison, expansion et croissance foliaires et finalement sénescence. La distribution de fréquence des poids secs des rameaux aériens montre une hiérarchie de taille plus marquée dans les sites à forte densité que dans les autres sites, mais qui semble s'atténuer quand la saison avance. Le recrutement par plantules est peu important dans tous les sites. La densité des rameaux aériens, la phénologie et le développement des inflorescences femelles diffèrent d'un site à l'autre. Dans la tourbière et dans la muscinaie, l'émergence des rameaux aériens est plus hâtive et les densités de rameaux aériens et de rameaux femelles sont plus élevées.

**DISCIPLINE:** Botanique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Lac à l'Eau-Claire, Québec.

86-044 **GOSSELIN, M. ET AL.** (1986). "Physical Control of the Horizontal Patchiness of Sea Ice Microalgae". Marine Ecological Program Series, 29: 289-298.

**ABSTRACT / DESCRIPTION:**
Factors controlling the horizontal distribution of sea-ice microalgae were studied in Southeastern Hudson Bay and adjacent Manitounuk Sound (Canadian Arctic). Both large (-30 km) and small (0.3 to 500m) scales of variability were investigated. Results showed that salinity was the most important factor controlling large scale distribution of the ice-microalgal biomass, through its effect on the structure of the ice. Variation in the thickness of the snow-ice cover, which

determines irradiance at the bottom of the ice, was the factor controlling distribution of the algal biomass at smaller scale. The relation between ice-algal abundance and snow-ice thickness changed however over the season. At the beginning of the growing season (in April when the bottom-ice irradiance was higher than a minimum critical irradiance), maximum algal biomass was observed under areas covered by the smallest snow depths. Towards the end of the season, when light transmitted through the snow-ice cover increased, maximum algal biomass was observed under areas covered by the deepest snow. This suggests that ice algae have both minimum and maximum critical light levels. The minimum level is the irradiance below which there is no photosynthetic activity ($I_{min}$ - 7.6 u Einst $m^{-2}s^{-1}$) and the maximum level corresponds to the inhibiting light intensity, which may vary during the growth season. The horizontal heterogeneity of the snow-ice cover, which is influenced by wind at the air-ice interface, thus provides diversified bottom-ice habitats where irradiance is compatible or not with the physiological limits of the ice microalgal cells. This results in a strong patchiness in distribution of ice-bottom microalgae.

**DISCIPLINE:** Environmental Sciences/Ecology.

**FIELDWORK LOCATION:** Manitounuk Sound, Nouveau-Québec.

**86-045** **GUAY, H.** (1986). Les femmes Inuit et le développement. Communication, Conférence nationale des étudiants en études nordiques, Ottawa, 17-18 novembre, 1986.

**RÉSUMÉ / DESCRIPTION:**
J'emprunte la lunette théorique du paradigme Femmes et Développement pour situer le rôle joué par les femmes à l'intérieur de la société Inuit contemporaine. Au niveau macro-social Boserup (1970) affirme que la scolarisation est l'outil principal qui permettra aux femmes de profiter du développement. La spécificité de mon étude de cas démontre que la dimension économique (l'autonomie financière) est utile pour l'analyse de la situation des femmes mais qu'elle n'est pas suffisante. Tel que démontré par Bénéria et Sen (1981) le regard doit également se porter au niveau micro-social. Dans la sphère publique, les femmes Inuit profitent du développement. Elles ont un accès non- discriminatoire à la scolarisation et plusieurs d'entre elles occupent des emplois de type clérical ou de col blanc sur une base annuelle et à temps complet. Pour leur part, les hommes se retrouvent souvent dans des emplois de col bleu à caractère saisonnier. Une expression de la subordination des femmes Inuit se retrouve à l'intérieur des relations de couple. Mon hypothése est la suivante: les femmes Inuit scolarisées qui détiennent un emploi rémunéré sont victimes de la violence domestique d'une manière plus fréquente que les femmes Inuit non-scolarisées impliquées dans les activités domestiques. Je définis les limites de l'application du modèle Femmes et Développement en situant la

société Inuit à l'intérieur d'un contexte culturel particulier et des rapports de classe à l'intérieur de la société canadienne.

**DISCIPLINE:** Sociologie.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Québec nordique.

86-046 **LAPRISE, D.** (1986). Évolution récente du pergélisol dans une tourbière à palses du golfe de Richmond (Québec nordique). Thèse de maîtrise, Département de phytologie, 1986, 35 p.

**RÉSUMÉ / DESCRIPTION:**
La première partie de ce travail évalue le taux de dégradation du pergélisol dans une tourbière à palses de la région du Golfe de Richmond depuis les 25 dernières années. L'analyse comparée des formes pergélisolées obtenues à partir de l'agrandissement d'une photographie aérienne en 1957 avec les cartes de la même tourbière effectuées en 1973 et en 1983, permet de constater que les palses se sont dégradées de façon significative durant cette période. Dans l'ensemble de la tourbière, il y a eu une importante diminution de la surface occupée par le pergélisol. De nombreuses transformations se sont produites au niveau du champ de palses comme en témoignent la réduction marquée (49%) de la superficie totale occupée par les palses et les bourrelets entre 1957 et 1983 et l'augmentation de la surface (44%) et du nombre de mares de thermokarst.
L'étude du bois de réaction de 140 épinettes noires distribuées dans l'ensemble de la tourbière a permis de déceler les phases importantes de dégradation du pergélisol depuis les derniers 100 ans. Les périodes ou l'on observe une fréquence élevée d'apparition de bois de réaction correspondent à des phases d'effondrement et de disparition des palses. Ainsi, la dégradation des palses, amorcée à partir de 1880, s'accentue entre 1930 et 1945 et s'étend à l'ensemble de la tourbière entre 1950 et 1965. Les palses qui devaient former des plataux palsiques se sont scindées pour créer des buttes de faible étendue, ainsi que des bourrelets.

**DISCIPLINE:** Botanique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Golfe de Richmond, Québec nordique.

86-047 **LÉVESQUE, R., M. ALLARD et M.K. SEGUIN** (1986). Cartographie assistée par ordinateur du pergélisol aux rivières Nastapoca et Sheldrake, Hudsonie. Affiche, Colloque, ACFAS, Montréal, 12-16 mai, 1986.

**RÉSUMÉ / DESCRIPTION:**
Le terrain d'étude qui se situe en zone de pergélisol discontinu, couvre une superficie d'environ 3 400km$^2$ (56°30'N-57°00'N et 75°30'W-76°30'W). Le territoire, autrefois

envahi par la mer de Tyrrell sur la moitié de sa surface, offre un éventail diversifié de dépôts quaternaires. La ligne des arbres suit un tracé nord-sud parallèle à la côte. Cette dichotomie entre la frange côtière et l'arrière-pays est omniprésente, la mer d'Hudson assurant aussi un gradient ouest-est de la mophologie cryogène (on passe des buttes minérales de pergélisol près du littoral, aux palses à l'intérieur des terres) et de la répartition du pergélisol. De 80% à 100% de pergélisol par unité de terrain cartographiée (1:50 000) en bordure de la mer, le pergélisol occupe souvent moins de 20% des dépôts à 50 km de celle-ci. Au total le pergélisol mesuré par résistivité électrique (215 sondages) décroit aussi d'ouest en est. Celles-ci sont d'environ: 19.8 m dans les dépôts marins, 16m dans les dépôts fluvio-glaciaires et 20m dans les dépôts glaciaires à la rivière Nastapoca. A la rivière Sheldrake les épaisseurs sont moins importantes, soit: 12m dans les dépôts marins et 13m dans les dépôts fluvio-glaciaires.

**DISCIPLINE:** Géologie.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Rivières Nastapoca et Sheldrake, Nouveau-Québec.

**86-048** **LOWE, R.** (1986). Les trois dialectes esquimaux de l'Arctique de l'Ouest: analyse descriptive et étude comparative. Thèse de doctorat, Département de linguistique, mars 1986.

**RÉSUMÉ / DESCRIPTION:**
Cette présentation générale retrace les principales étapes de la réalisation de la partie proprement linguistique du projet de COPE, c'est-à-dire de l'analyse et de la description des dialectes kangiryuarmiut, siglit, et uummarmiut. Ce faisant, nous indiquons de manière plus détaillée les principales difficultés auxquelles se sont vues confrontées nos recherches et les solutions que nous avons tenté d'y apporter, problèmes qui n'avaient pas leur place dans les ouvrages publiés en cours de recherche, vu la nature même de ces ouvrages destinés à des fins pédagogiques, et comte tenu des contraintes pécuniaires qui pesaient sur leur publication. Il importe cependant, pour pouvoir apprécier à leur juste valeur ces ouvrages et en comprendre la portée limitée, de situer leur publication dans le cadre des conditions, souvent difficiles, qui ont entouré leur réalisation. Nous aurons l'occasion alors de décrire la démarche générale et la méthodologie suivies pour la cueillette et l'analyse des données linguistiques de chaque dialecte et d'indiquer les raisons qui ont prolongé de trois années la réalisation de ce premier volet du projet linguistique de COPE, volet pour la réalisation duquel avait été prévue, au départ, une seule année de recherches. Enfin, ce chapitre nous permettra de justifier plus avant le cadre général de présentation que nous avons adopté pour la description des trois dialectes esquimaux de l'Arctique de l'Ouest, cadre qui

se démarque à maints égards de ceux qui ont prévalu à ce jour en linguistique esquimaude.

**DISCIPLINE:** Linguistique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Nouveau-Québec.

86-049 **MARIN, P.** (1986). Sédimentation éolienne et croissance de l'épinette blanche en milieu dunaire à Poste-de-la-Baleine (Québec nordique). Colloque en études nordiques, Université Laval, 29 novembre 1986.

**RÉSUMÉ / DESCRIPTION:**
Les formes de croissance adoptées par l'épinette blanche (Picea glauca (Moench) Voss) dans des conditions de sédimentation éolienne ont été étudiées dans une dune située au nord du village de Poste-de-la-Baleine (Québec subarctique). Trente-deux arbres (14 vivants et 18 morts) ont été décrits d'un point de vue morphologiques et soumis à l'analyse dendrochronologie. Dans des conditions de sédimentation lente (taux de 5-6 cm/an), les arbres développent des racines adventives sur le tronc enfoui, tant que le sédiment n'excède pas une épaisseur d'environ 1,25 m. La forme en fuseau de la base du tronc (diamètre du tronc plus petit au collet qu'à un niveau susjacent) représente une autre modification morphologique importante chez ces arbres. Elle s'explique par un ralentissement de la croissance radiale en profondeur vraisemblablement dû aux basses températures maintenues dans le dépôt nivéo-éolien par la présence de lentilles de neige durant la saison de croissance. Lorsque la sédimentation se fait plus rapide et que le taux d'accumulation passe à plus de 8 cm/an, les arbres commencent à dépérir. Ils subissent des dommages importants (arrachement de branches, cassure de la tête) causés par le poids combiné du sable et de la neige. L'espérance de vie des plus grands arbres est à peu près de 50 ans dans de telles conditions de croissance. La dune avance à raison de 0,74 m/années vers le nord et le taux moyen de sédimentation) est de 7,65 cm/année. Ces valeurs se rapprochent de celles obtenues dans les dunes côtières de Finlande. Les arbres sont inéluctablement voués à la mort par suite du déplacement de la dune.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Poste-de-la-Baleine, Québec.

86-050 **MICHAUD, Y. et J.C. DIONNE** (1986). Altération des substrats rocheux et rôle du soulèvement gélival dans la formation de champs de blocaille, en Hudsonie. Thèse de doctorat.

**RÉSUMÉ / DESCRIPTION:**
Depuis la déglaciation (7500 ans BP) et le retrait de la mer de Tyrrell, les cuestas hudsoniennes sont soumises aux agents

d'érosion périglaciaires. Les surfaces rocheuses composées principalement de basalte, de dolomie et d'arkose, montrent, en moyenne, un pourcentage d'altération de 27%. Bien que la gélifraction soit le processus dominant, le soulèvement gélival a retenu l'attention en raison de son originalité et de son intensité. Ce mécanisme responsable de la formation des soulèvements rocheux périglaciaires joue aussi un rôle significatif dans la formation de champs de blocaille. Dans le secteur du golfe de Guillaume-Delisle, dans une aire de 16 km$^2$, plus de 1800 édifices de soulèvement gélival ont été observés, ce qui donne, en moyenne, 110 soulèvements/km$^2$. Les formes d'éjection ont été regroupées en quatre grandes catégories: monolithes, monticules, chaos et édifices à dépression centrale. Le volume de débris impliqués dans les soulèvements est important. Il concourt à la destruction des substrats rocheux au même titre que la gélifraction et la gélidisjonction. Dans le secteur étudié, plus de 25 000 m$^2$ de surface rocheuse ont été détruits par le soulèvement gélival depuis la déglaciation. Comme les fragments éjectés demeurent sur place, il en résulte des champs de blocaille. La manifestation du phénomène requiert une surface rocheuse abondamment fissurée et saturée en eau ainsi que l'existence de cycles gel-dégel de grande amplitude. Le pergélisol jouerait aussi un rôle dans leur formation.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Golfe de Guillaume-Delisle,
Nouveau-Québec.

86-051 **MILLET, J. et S. PAYETTE** (1986). Histoire des feux et dégradation du couvert coniférien au Lac à l'Eau-Claire, Nouveau-Québec. Affiche, Colloque, ACFAS, Montréal, 12-16 mai, 1986.

**RÉSUMÉ / DESCRIPTION:**
Sur les îles du Lac à l'Eau-Claire, le pourcentage de recouvrement en conifères varie entre 25 et 10%. Le pourcentage d'occupation des arboraies atteint, pour sa part, des valeurs extrêmes de 27 et 8%. Ces différences du couvert coniférien sont reliées à une régénération variable après feu. La datation au $^{14}$C de charbons d'épinette noire (Picea mariana (Mill.)BSP) trouvés sur les sommets dénudés à végétation lichénique, révèle que les îles subissent des dégagements forestiers depuis au moins 2400 ans BP. Par ailleurs, on évalue à 5% du territoire la surface dégagée par les feux les plus récents. Cinq périodes d'ouverture du paysage ont été observées: 2300-2100, 1550-1350, 1250-1050, 750-650 et 350-250 ans B.P.

**DISCIPLINE:** Foresterie.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Lac à l'Eau-Claire,
Nouveau-Québec.

86-052 **MORISSET, P. et J. DESHAYE** (1986). Structure phytogéographique de la flore vasculaire du Québec nordique et des régions voisines. Communication, Colloque, ACFAS, Montréal, 12-16 mai, 1986.

**RÉSUMÉ / DESCRIPTION:**
La flore vasculaire du Québec nordique et des régions voisines au nord du 55ième parallèle comprend environ 650 espèces. Nous avons une connaissance relativement complète de la flore de 38 localités réparties dans ce territoire. À l'aide de cette base de données, nous examinons l'importance des divers éléments phytogéographiques dans cette flore, aussi bien au niveau latitudinal (éléments circumhémisphérique, nord-américain, amphi-atlantique, cordilérien, etc.). L'importance relative de ces éléments est interprétée et discutée en raport avec les facteurs géographiques et écologiques qui contrôlent la nature et la richesse de la flore vasculaire dans le nord du Québec, entre autres les assises géologiques, l'altitude, la proximité des côtes, le climat et les formations végétales.

**DISCIPLINE:** Botanique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Québec nordique.

86-053 **PELLETIER, R.** (1986). Étude comparative de végétation de trois sites à Rubus chamaemorus L. à l'île des Foreurs, lac à l'Eau-Claire, Nouveau-Québec. Mémoire de baccalauréat, Faculté de foresterie et de géodésie, 1986, 66 p.

**RÉSUMÉ / DESCRIPTION:**
Dans la région du lac à l'Eau Claire (56°15' N-74°30' O) au Nouveau-Québec, la végétation de trois sites à Rubus chamaemorus a été échantillonnée et décrite. Cet échantillonnage se définit comme étant systématique et non stratifié. Cette étude de synthèse de la végétation, dont l'objectif principal est la comparaison de la fréquence et du recouvrement des populations végétales des sites, constitue un apport supplémentaire aux travaux portant sur la végétation des écosystèmes tourbeux en milieu subarctique québécois. Ces sites montrent un gradient de la couverture forestière et de l'altitude. Ce gradient influence directement l'exposition aux vents, la température et l'intensité lumineuse au niveau du sol qui par conséquent modifient l'enneigement. Les trois sites sont: une formation tourbeuse semi-boisée, une formation tourbeuse arbustive à krummholz et une formation tourbeuse arbustive. En tout 15 espèces caractéristiques du premier degré, 5 espèces caractéristiques du second degré et 9 espèces constantes ont été reconnues. Rubus chamaemorus constitue l'élément principal de la strate herbacée pour chaque formation. Des mesures de la productivité de Rubus chamaemorus, effectuées par Dumas (1986), y sont discutées. Celles-ci portent sur l'étude démographique des populations et sur l'allocation de biomasse des individus.

**DISCIPLINE:** Foresterie.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Lac à l'Eau-Claire,
Nouveau-Québec.

86-054 **PELLETIER, Y. et R. GAUTHIER** (1986). Esquisse de la végétation intertidale de la baie de Kangiqsualujjuaq, Baie d'Ungava, Nouveau-Québec. Communication, ACFAS, Montréal, 12-16 mai, 1986.

**RÉSUMÉ / DESCRIPTION:**
La baie de Kangiqsualujjuaq, sur l'estuaire moyen du fleuve George, se subdivise en deux unités distinctes, soit: la slikke et le schorre. La slikke, située entre -11 et -3 m sous le plus haut niveau atteint par la marée, est complètement dépourvue de végétation. Sur le schorre, entre -3 et 0 m, 5 zones de végétation ont été identifiées.
1- Zone pionnière à Puccinellia phryganodes
2- Zone à Puccinellia phryganodes et Plantago maritima
3- Zone à Carex subspathacea
4- Zone à Carex subspathacea et parnassia palustris
5- Zone à Carex aquatilis et Calamagrostis canadensis
Ces zones s'étagent suivant un gradient topographique et conséquemment suivant un gradient de submersion. Les changements topographiques induits par l'aggradation et la dégradation du pergélisol provoquent des perturbations dans la distribution des zones végétales.

**DISCIPLINE:** Botanique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Kangiqsualujjuaq,
Nouveau-Québec.

86-055 **PELLETIER, Y., M. ALLARD et M.K. SEGUIN** (1986). Méthodes d'études du pergélisol et de la dynamique glacielle de la baie de Kangiqsualujjuaq, Nouveau-Québec. Affiche, Association géologique du Canada, réunion, Ottawa, 19-21 mai, 1986.

**RÉSUMÉ / DESCRIPTION:**
La baie de Kangiqsualujjuaq (58° 40'N, 65° 47'W) se caractérise par du pergélisol en zone intertidale où il se présente sous formes de buttes minérales et de polygones sur schorre. Diverses méthodes géo-physiques, telles que la résistivité électrique, la polarisation provoquée et l'électromagnétisme ont permis de déterminer l'épaisseur du pergélisol. Celle-ci varie entre 2 et 7 m. L'épaisseur du mollisol, mesurée avec une sonde à thermistance, a été évaluée à 1,7 m en moyenne. Des forages ont permis de vérifier que la glace de ségrégation est à l'origine de ces formes. Pour mesurer la mobilité des blocs glaciels dont la taille varie de quelques cm à plus de 4 m de diamètre, 12 places échantillons de 10 000 $m^2$ furent choisies au hasard. A l'intérieur de chacune de ces surfaces

était choisi un bloc de forte dimension et peu susceptible d'être déplacé. A partir de ce point repère, tous les blocs se trouvant à l'intérieur d'une distance de 30 m étaient systématiquement répertoriés. L'azimuth et la distance par rapport au bloc repère, la longueur et la largeur du bloc, son émoussé et son enfouissement relatif ont été notés. Les blocs anguleux, peu enfouis et de taille variant entre 50 et 150 cm sont les plus mobiles.

**DISCIPLINE:** Géologie.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Kangiqsualujjuag, Québec nordique.

86-056 **PLANTE, L.** (1986). Modélisation géophysique des cratères météoritiques du lac à l'Eau-Claire, Nouveau-Québec. Thèse de maîtrise, Département de géologie, avril 1986, 172 p.

**RÉSUMÉ / DESCRIPTION:**
Notre but est de construire des modes structuraux des 2 cratères à partir des données gravimétriques de la DPG. La nature du phénomène ayant causé ces cratères i.e. l'impact d'un bolide à vitesse cosmique suggère en effet que les déformations ou transformations les plus importantes à survenir dans le socle auront un écho au niveau de la densité des roches. Ces modèles devraient donc aider à soutenir l'hypothèse météoritique. Ils devraient de plus, aider à la compréhension des processus de modification et de réajustement qui donnent leur forme finale aux cratères. Les données gravimétriques existent déjà. Nous allons donc approfondir nos connaissances de la géologie du socle aux alentours du LEC. Pour ce faire, une cartographie le long des rivages du lac a été effectuée durant les étés '83 et '84 et un arrêt a été fait à tous les kilomètres environ. A chaque arrêt, une description des lithologies présentes a été produite et un échantillon a été prélevé pour fin de mesures pétrophysiques. Ces connaissances géologiques, alliées aux densités et susceptibilités magnétiques que nous aurons mesurées, permettront de faire des corrélations entre la géologie et la géophysique et de poser les jalons indispensables pour la construction des modèles.

**DISCIPLINE:** Géologie.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Lac à l'Eau-Claire, Nouveau-Québec.

86-057 **PLANTE, L.** (1986). Modélisation géophysique des cratères météoriques du Lac à l'Eau-Claire, Nouveau-Quebec. Affiche, Colloque, ACFAS, Montréal, 12-16 mai, 1986.

**RÉSUMÉ / DESCRIPTION:**
Le Lac à l'Eau-Claire (74 30'W, 56 15'N) est formé par 2

cratères de 32 et 22 km de diamètre, causés par un impact météoritique double au Pennsylvanien (287 ± 26 Ma, Rb/Sr). Des anomalies de gravité négatives et circulaires d'environ -100 wm.s$^{-2}$ sont corrélées aux deux cratères et à des anomalies magnétiques négatives. Des contrastes de densité mesurés de -120 à -170 kg.m$^{-3}$ permettent de modeler des structures circulaires de surface, composées de 2 zones concentriques où la densité augmente radialement à partir du centre et dont les bords penchent vers l'intérieur. Le modèle "Ouest" montre un épaississement au centre. Une origine par impact météoritique peut seule expliquer la forme des modèles.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Lac à l'Eau-Claire,
Nouveau-Québec.

**86-058** **SIROIS, L. et S. PAYETTE** (1986). Dynamique de la regénération après-feu et déforestation au Nouveau-Québec. Colloque, La dynamique des écosystèmes forestiers du Québec, ACFAS, Montréal, 12-16 mai, 1986.

**RÉSUMÉ / DESCRIPTION:**
Le paysage végétal de la zone subarctique du Québec résulte essentiellement de l'effet combiné des feux et du climat sur la végétation. Les feux survenus durant les périodes climatiques défavorables auraient provoqué l'augmentation de la portion toundroïde aux dépens des forêts préexistantes, conduisant ainsi à la toundra-forestière actuelle. Le but de la recherche en cours est de développer un modèle explicatif du dynamisme de la déforestation et de la recolonisation après-feu. On assume que les grands feux survenus durant la décennie 1950-59 constituent un exemple approprié pour vérifier l'hypothèse voulant que, dans le contexte climatique actuel, il y ait diminution de la densité du couvert forestier (déforestation) à la faveur de chaque événement incendiaire sur un site donné. Les premiers résultats de ce travail indiquent que lorsqu'il y a régénération forestière, elle se réalise dans les quelques années suivant le feu. Si cette regénération ne se produit pas rapidement, on ne peut s'attendre à ce qu'il y ait une quantité importante d'arbres qui s'implantent ultérieusement. C'est une situation répandue qui, dans les conditions climatiques actuelles, conduit inexorablement à une déforestation majeure.

**DISCIPLINE:** Foresterie.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Québec nordique.

**86-059** **ST-CYR, N.** (1986). Formation et évolution des versants rocheux des îles centrales du lac à l'Eau-Claire, Québec subarctique. Thèse de maîtrise, Département de géographie, avril 1986, 209 p.

**RÉSUMÉ / DESCRIPTION:**
Depuis l'époque de Davis (1888), l'évolution des versants est au centre des contréverses relatives à l'évolution du relief terrestre. Le débat s'est notamment cristallisé autour de l'opposition entre la pédiplanation et la pénéplanation. Le contexte théorique de ce débat fut jusqu'à récemment celui d'une géomorphologie dynamique et climatique. L'élaboration d'une version structurale des formes du relief (RITCHOT, 1975, LAPLANTE et RITCHOT, 1984) relance le débat à partir des discontinuités des champs morphologiques. Dans cette version, la pédiplanation ou l'altiplanation prédomine, non pas en fonction du temps ou des contraintes climatiques, mais selon les types de discontinuités. Le talus d'éboulis est enfin perçu comme une force limitrophe marquant le type de discontinuité du relief et repérant la prédominance d'une phase de pédiplanation ou d'altiplanation, dépendamment de sa localisation dans le volume morphologique. Les talus d'éboulis correspondant à la pédiplanation et repérables à partir des fissures de clivage sont très peu nombreux, ce qui suggère dans l'ensemble que l'altiplanation prend le ralais d'une pédiplanation résiduelle. Cette conclusion générale se rapproche du modèle hudsonien tel qu'illustré par l'évolution d'un fissi-dôme (RITCHOT, 1975).

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Lac à l'Eau-Claire, Québec.

86-060 **ST-CYR, N.** (1986). Formation et évolution des versants rocheux des îles centrales du lac à l'Eau-Claire, Québec subarctique. Affiche, Conférence nationale des étudiants en études nordiques, Ottawa, 18-19 novembre, 1986.

**RÉSUMÉ / DESCRIPTION:**
Le secteur d'étude est constitué des onze îles formant l'anneau central du bassin ouest du lac à l'Eau-Claire dans le Québec subarctique. Les îles, composées de brèche volcanique, présentent une configuration structurée par la répétition d'une forme de coupole éventée en son centre. Les flancs des coupoles sont tronqués de falaises vives qui alimentent de nombreux talus d'éboulis. Une typologie des talus d'éboulis est proposée à partir de l'apparence dynamique de la paroi. L'ablation des parois est étudiée en regard des variations du dispositif fissural qui s'avère en étroite relation avec les volumes morphologiques des îles. Les formes d'accumulation, principalement des tabliers et des cônes d'éboulis, et les traces des événements du quaternaire récent tendent à démontrer que l'accumulation a connu des phases beaucoup plus actives (pédiplanation) que ce qui prévaut actuellement et qui peut être qualifié d'activité faible ou d'altiplanation. Les processus de cryoclastie sont efficaces dépendement de leur association au dispositif fissural. Des mouvements secondaires mais non négligeables retardent la stabilisation de certains talus. Il s'agit des glissements de matériel par gravité, de

la solifluxion et des actions littorales et glacielles. L'ensemble des observations, dont les indices biogéographiques, suggère que l'évolution des talus d'éboulis témoigne d'un transfert de la pédiplanation vers l'altiplanation, ce qui est en accord avec le modèle hudsonien.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Lac à l'Eau-Claire, Québec.

86-061 **BEREZANSKI, D.** (1986). Summer Feeding and Resting Behaviour of Wood Bison and the Effects of Fire on Vegetation near Waterhen, Manitoba. M.Sc. Thesis.

**ABSTRACT / DESCRIPTION:**
The summer diets of a confined herd of wood bison were studied at Waterhen, Manitoba. Sedges and grasses dominated the diets each month, but varied in proportion of total plant composition. However, observations of the herd indicated that forbs were the dominant plants grazed, and were taken in successively decreasing proportions each month. Age-sex of bison did not differ in choice of plant species eaten during June, as indicated by observed behaviour. The classes differed in July, with cow diets differing from bull and spikehorn diets. Only bulls and spikehorns differed in August. Resting habitats were chosen in different proportions between months in response to tabanid fly harassment. Open habitats were the dominant choices in June and July, but accounted for less than half the choices in August. Tabanid fly activity was greatest in June and July, and almost nil in August. The bison were thought to seek open habitats to escape these flies. The age-sex classes used habitats in different proportions during June and in July. Cows avoided open habitats, while spikehorns used open habitats the most. All classes used habitats in similar proportion during August.

**DISCIPLINE:** Zoology.

**FIELDWORK LOCATION:** Waterhen, Manitoba.

86-062 **GREGORY, D.** (1986). Nurses and Indian Elders/Traditional Healers: An Exploration of the Contact Between Non-Traditional and Traditional Health Care Providers on Indian Reserves and in Health Centres in Manitoba. Report, Northern Studies Committee - 1986.

**ABSTRACT / DESCRIPTION:**
An exploratory-descriptive, two-phase, qualitative research design was implemented to examine the extent of collaboration/interaction between nurses and Indian Elders/traditional healers in Manitoba. Phase I consisted of semi-structured, face to face interviews with Medical Services Branch nurses (N + 10) and Indian elders (N = 13) on three northern Indian reserves. Phase II administered a close-ended, structured, census survey mail questionnaire to nurses (N = 64) working autonomously with Indian clients. Interviews with nursing staff (Phase I) provided eight case studies where interactive and to a lesser extent, collaborative client treatment efforts between nurses and members of the traditional health care system had occurred. Indian people were identified

as utilizing both health care systems (traditional and Western) in the procurement of sympton relief. The belief that traditional healers wish to maintain a clandestine presence in relation to the dominant health system was challenged by the Elder informants. Based on an 81.2% survey return rate, 52% (N = 27) of the nurses had initiated client referrals to Elders, while 39% (N = 20) had made client referrals to traditional healers. Patients asked 40% (N = 21) of the nurses for referral to a traditional healer. The majority of the nurses (67%) were aware of traditional healing practices in their communities.

**DISCIPLINE:** Health/Medicine.

**FIELDWORK LOCATION:** Northern Manitoba.

86-063 **ISAAK, P.C.** (1986). The Optics of Three Dimensional Refractive Media. B.Sc. Thesis, Department of Electrical Engineering.

**ABSTRACT / DESCRIPTION:**
This study of light propagation in three dimensional refractive media presents a computer simulation based on the theory of geometrical optics. The medium considered is a near earth atmosphere modeled by a set of ellipsoidal isotherms. Light ray paths are determined as a function of the atmosphere's refractive index, which is defined at each ellipsoid surface and considered to vary linearly between surfaces. The refractive path will, therefore, describe a smooth curve through the atmospheric media.

Each light ray is traced from an observation point at a specific elevation and lateral angle of sight towards an object plane. By comparing the straight line projected ray end-point in the object plane, with the refracted ray object plane end-point, the medium's refractive characteristics can be evaluated. This light ray transfer characteristic can be used to predict mirage images in a given object plane.

**DISCIPLINE:** Electrical Engineering.

**FIELDWORK LOCATION:** Resolute Bay and Tuktoyaktuk, N.W.T.

86-064 **KAUFERT, J. and W. KOOLAGE** (1986). "Meaningful Informed Consent and the Canadian Native Patient". Abstracts, Canadian Ethnology Society: 65.

**ABSTRACT / DESCRIPTION:**
Our research with Native Language Interpreters in Health Care Settings in Manitoba has revealed that one of their significant functions is to act as members of the health care delivery system to obtain informed consent to medical and/or nursing procedures. Laws of informed consent have derived from the laws of battery which supposedly protect the individual from

"unwarranted, negligent, and unauthorized touching" (Lowe and Alexander, 1980). This paper will discuss the implications of the utilization of Native Language Interpreters in obtaining informed consent.

**DISCIPLINE:** Health/Medicine.

**FIELDWORK LOCATION:** Island Lake, Manitoba.

86-065 **KAUFERT, J. ET AL.** (1986). A Northern Person's Guide to Southern Health Care Survival. Native Health Services Information, Videotape in English, Saulteau, Ojibwa and Cree.

**ABSTRACT / DESCRIPTION:**
These 26 minute video-tape presentations in English, Cree and Saulteaux are oriented to informing northern Native health consumers from remote communities about organizational, socio-cultural, and ethical aspects of urban hospital-based medical services. Specifically, they focus on the work of health care interpreters who assist patients in coping with the health care system. The video-tapes describe Native persons' experiences of leaving remote northern communities to come to a southern city for medical care. They outline the organizational routines which a Native patient can expect to undergo and discuss the support services that are available for them. Patients' rights and informed consent issues are also discussed.

**DISCIPLINE:** Health/Medicine.

**FIELDWORK LOCATION:** Island Lake, Manitoba.

86-066 **LEHN, W.H.** (1986). "Terrestrial Images Transmitted by the Novaya Zemlya Effect". O.S.A. Topical Meeting on Meteorological Optics, April 3-4, 1986.

**ABSTRACT / DESCRIPTION:**
The Novaya Zemlya effect is a long-range mirage produced by optical ducting in the atmosphere, when light rays trapped beneath a temperature inversion travel up to several hundred kilometers from source to observer. The effect is traditionally associated with solar images, and little study has been applied to terrestrial objects imaged by the same process. This presentation qualitatively analyses mirage images obtained at Resolute Bay (showing up to 5-fold multiplicity) in terms of the Novaya Zemlya effect.

**DISCIPLINE:** Electrical Engineering.

**FIELDWORK LOCATION:** Resolute, N.W.T.

86-067 **LEHN, W.H. and J.S. MORRISH** (1986). "A Three-Parameter Inferior Mirage Model for Optical Sensing of Surface Layer Temperature Profiles". Institute of Electrical and Electronic Emergences, Transactions on Geoscience and Remote Sensing. GE-24, No.6, November 1986.

**ABSTRACT / DESCRIPTION:**
Inferior mirages provide a sensitive and fairly accurate probe for determining vertical temperature distributions in the atmospheric surface layer. Optical measurements on the image can be used to calculate the parameters in a temperature profile model, in this case a function with three adjustable parameters. The function contains an exponential term (two parameters) and an additive linear term (one parameter). The optical observations, for which a known target is required, consist of the elevation angles of the apparent peak, caustic, and horizon. Analytic expressions that must be simultaneously satisfied are derived for all three conditions. The parameter values are extracted numerically by minimizing a positive definite function of the three conditions. The model is tested on a set of images for which nearly simultaneous photographs, theodolite readings, and temperature profiles were available. For each image the three calculated elevations matched the measured values very closely. The complete images also match well in most of the cases. The results, a distinct improvement over previous two-parameter models, also provide a more accurate reconstruction than is obtained from the thermodynamic model for unstable stratification.

**DISCIPLINE:** Engineering.

**FIELDWORK LOCATION:** Resolute, N.W.T.

86-068 **LEHN, W.H. and R.E. WALLACE** (1986). "Continuous-Tone Mirage Images Computed from Digitized Source Photographs". O.S.A. Topical Meeting on Meteorological Optics, April 3-4, Technical Digest, p. 36-37.

**ABSTRACT / DESCRIPTION:**
For spherically symmetric atmospheres, the properties of a mirage image can be summarized in a single curve, called the transfer characteristic. This curve is a plot of apparent object elevation against actual elevation. Such a mapping may be applied to digitized photographs of natural objects. It relocates each horizontal line of the original (object elevation) to a new horizontal level (apparent elevation). When the newly positioned image lines are displayed on a monitor, a very natural looking mirage image is generated. This form of mirage simulation is a very useful tool in mirage research.

**DISCIPLINE:** Electrical Engineering.

**FIELDWORK LOCATION:** Tuktoyaktuk, N.W.T.

86-069 **OAKES, J.** (1986). "A Scientist's Perspective on Skin Clothing". Presented to Eskimo Point Territorial School, May 22, 1986.

**ABSTRACT / DESCRIPTION:**
Studying clothing provides insights on the lifestyles, values and needs of those that wear the clothing. Skin clothing reflects the changing availability of animals, importance of clothing as a social identifier and historical changes in clothing needs.

**DISCIPLINE:** Sociology.

**FIELDWORK LOCATION:** Eskimo Point, N.W.T.

86-070 **OAKES, J.** (1986). Education: From the Igloo to the Classroom. Paper, Boreal Institute for Northern Studies Conference, November 20-22, 1986.

**ABSTRACT / DESCRIPTION:**
Traditionally, life skills were taught through active participant-observation within the family unit. A shift to formalized education almost eliminated life skills instruction. Over the past ten years, elders have stressed the need for students to learn some traditional skills, however, issues including limited time alotments, the classroom environment and the lack of skilled instructors had to be resolved. Professional and para-professional Inuit teachers attempt to alleviate problems incurred while teaching "culture". The effectiveness of culture course instructors is limited by factors such as the need for a curriculum, lack of resources and the lack of funds to hire elders. This fall, the introduction of a culture curriculum for grades 7, 8 and 9 will help maintain course continuity and introduce teaching guidelines.

**DISCIPLINE:** Education.

**FIELDWORK LOCATION:** Eskimo Point, N.W.T.

86-071 **OAKES, J.** (1986). Factors Influencing Copper Inuit Clothing. Paper, CESCE Annual Conference, Edmonton, May 15-18, 1986.

**ABSTRACT / DESCRIPTION:**
This paper summarizes historical changes in Copper Inuit clothing. An analysis of these changes illustrate the influence of whalers, traders and neighbouring Inuit groups on Copper Inuit fashions.

**DISCIPLINE:** Sociology.

**FIELDWORK LOCATION:** Coppermine, N.W.T.

**86-072** **OAKES, J.** (1986). INUIT ANNURAANGIT: Our Clothes. Documentary Accompanying a Travelling Fashion Show of Inuit Clothing Sponsored by the University of Manitoba and Inuit Silattuqsarvingat.

**ABSTRACT / DESCRIPTION:**
Inuit clothing styles have distinctive, regional variations. Caribou skin garments from the Copper Inuit, Netsilik Inuit, Igloolik Inuit, Caribou Inuit and South Baffin Inuit are described. Photographs of the seamstresses who made the garments shown in the travelling fashion show are also included.

**DISCIPLINE:** Sociology.

**FIELDWORK LOCATION:** Coppermine, Igloolik, Eskimo Point, Pangnirtung, Iqaluit and Gjoa Haven, N.W.T.

**86-073** **OAKES, J.** (1986). Inuit Pattern Development and Alteration. Professor Shannon's Pattern Alteration Laboratory, March, 1986.

**ABSTRACT / DESCRIPTION:**
Traditional pattern development techniques used by seamstresses demonstrate an intimate knowledge of proportion, silhoutte and fit. Through hand, eye and string measurements complicated patterns are repeatedly created. A comparison between Euro-American and Inuit pattern development techniques reveal two different, and equally technical, methods.

**DISCIPLINE:** Sociology.

**FIELDWORK LOCATION:** Coppermine and Eskimo Point, N.W.T.

**86-074** **OAKES, J.** (1986). Pattern Development Techniques Used by Caribou Inuit for Skin Parkas. Paper, National Student Conference on Northern Studies, Ottawa, November 17-19, 1986.

**ABSTRACT / DESCRIPTION:**
Traditional clothing patterns from the Paallirmiut, Ahiarmiut and Tahiujarmiut in the Eskimo Point area were collected from December 1985 to September 1986. The main objective was to preserve traditional clothing styles for future generations to use. The collection of patterns are included in a proposed skin clothing exhibition designed to increase museum awareness in northern Canada. Seamstresses taught the author pattern development methods using hand, eye and string measurements. Pattern lay-outs were recorded for all garments. Patterns were catalogued, accessioned, duplicated and stored at the Inuit Cultural Institute, primarily for use by northern seamstresses, educators and museums. A complete description of pattern

development for all garments will be included in the author's dissertation. Male and female caribou skin parka patterns are described and discussed in this research summary. Paallirmiut, Ahiarmiut and Tahiujarmiut parka patterns non-verbally communicate group identity, conformity, and social affiliation with neighbouring groups.

**DISCIPLINE:** Sociology.

**FIELDWORK LOCATION:** Eskimo Point, N.W.T.

86-075 **OAKES, J.** (1986). Regional Variations in Skin Clothing Fashions. Paper, National Student Conference on Northern Studies, Ottawa, November 17-19, 1986.

**ABSTRACT / DESCRIPTION:**
Historical and current skin clothing fashions were collected from Copper Inuit in Bay Chimo, Cambridge Bay and Coppermine and from Caribou Inuit from Eskimo Point, Rankin Inlet and Whale Cove. Field work began in October 1985 and will continue until August 1987. Archival and museum research, conducted from May-September 1985, supplemented historical information from Inuit elders. The main objective was to identify individual, regional and historical patterns in skin preparation, skin clothing construction and caribou skin fashion features. This paper focuses on historical and current fashion trends in everyday-wear and special occasion caribou skin parkas.

Regional and historical differences in fashions were influenced by physical, economic and social environments. Animal distributions, trapping, wage economy jobs, traders, whalers, tourists and interaction with neighbouring native groups influenced parka fashions. Cross-cultural diffusion of fashion features from neighbouring Inuit produced the most significant fashion innovations.

**DISCIPLINE:** Sociology.

**FIELDWORK LOCATION:** Eskimo Point, Rankin Inlet and Whale Cove, N.W.T.

86-076 **OAKES, J.** (1986). "Skin Preparation Techniques Used by Copper and Caribou Inuit". Paper, 5th Annual Inuit Conference in Montreal, November 6-9, 1986.

**ABSTRACT / DESCRIPTION:**
A comparison of skin preparation techniques used by Copper and Caribou Inuit was completed during two years of field work in Coppermine and Eskimo Point. An analysis of similarities and differences reveal the influence of new technology on traditional skin preparation methods.

**DISCIPLINE:** Sociology.

**FIELDWORK LOCATION:** Coppermine and Eskimo Point, N.W.T.

86-077 **OAKES, J. and R. RIEWE** (1986). Inuit Lifestyle: Unique to Umingmaktok (Bay Chimo). CBC Radio Interview, Aired February, 1986.

**ABSTRACT / DESCRIPTION:**
The Inuit lifestyle in Umingmaktok (Bay Chimo) is a unique mix of tradition and contemporary technology. This presentation includes a discussion of the school, postal system, telecommunications system, social services, hunting practises and laundry services in Umingmaktok.

**DISCIPLINE:** Sociology.

**FIELDWORK LOCATION:** Bay Chimo, N.W.T.

86-078 **OAKES, J., R. RIEWE and M.E. TYRCHNIEWICZ** (1986). "Factors Influencing Skin Boot Production in Arctic Bay". Canadian Home Economics Journal, Research Section, Fall, 38(4).

**ABSTRACT / DESCRIPTION:**
The purpose of this study is to describe skin boot production in Arctic Bay and to discuss the effect of changing lifestyles on skin boot production in Arctic Bay. Inuit seamstresses provided information on pattern development, pattern layout, cutting skins, design trends, fitting and maintenance of skin boots. Describing skin preparation and skin boot construction techniques provides an intimate view of physical, social and economic factors influencing each step. Skin boot production is influenced by weather conditions, terrain, availability of sealskins and physical condition of seamstresses; religion, community events and exposure to southerners; and a shift from a hunting economy to a wage economy and carving.

**DISCIPLINE:** Sociology.

**FIELDWORK LOCATION:** Arctic Bay, N.W.T.

86-079 **O'NEIL, J., J. KAUFERT and W. KOOLAGE** (1986). The Role of Native Medical Interpreters in Diabetes Education. Beta Release: Canadian Diabetes Association, 10(2): 198.

**ABSTRACT / DESCRIPTION:**
This paper utilizes data from a 5 year observational study of the role of Native language interpreters in health communication. The analysis of impact of language translators and cultural advocates in individual patient education and community health promotion emphasizes the importance of empowerment and food ecology.

**DISCIPLINE:** Health/Medicine.

**FIELDWORK LOCATION:** Island Lake, Manitoba.

86-080 **PELESH, R.E.** (1986). A Wildlife-Based Tourism Development Strategy for Churchill, Manitoba. Practicum, 1986.

**ABSTRACT / DESCRIPTION:**
Churchill, Manitoba is a northern community with a shrinking economic base. In the past, Churchill was an active deep-sea port, military, satellite research, and airline base. Since 1963, the number of job opportunities and income from these sectors has declined leaving tourism as the primary economic stabilizer of the area.

Analysis of visitor surveys and entrepreneur interviews revealed that wildlife activities are the most important segment of Churchill's tourism industry. These activities are very seasonal in nature with polar bear watching in fall being most popular. There appears to be insufficient promotion of the industry and misleading information on the wildlife activities presently available in the area. Improvement of current wildlife opportunities (i.e. greater accessibility) and the implementation of new activities are imperative if the present proportion of business attributed to tourism is to be maintained.

A wildlife-based tourism development strategy would enhance the tourist experience, thereby improving word-of-mouth advertising. Tourist activity must be compatible with the ecology of the area so that the long-term potential of tourism can be achieved.

**DISCIPLINE:** Natural Resources Management.

**FIELDWORK LOCATION:** Churchill, Manitoba.

86-081 **STARKS, D.J.** (1986). Aspects of Woods Cree Discourse. Paper, Linguistics Colloquium, Winnipeg, November 1986.

**ABSTRACT / DESCRIPTION:**
Woods Cree has three particles used to mark yes/no questions: na, ci, and ciyi. It is surprising, therefore, to find yet another particle, ma, which may be used to mark a yes/no-, but which also appears in a Wh- question. More puzzling still is the following: ma also functions as a coordinating conjunction, and yet it occurs in subordinate clauses. If ma is among other things a yes/no question marker and a coordinating conjunction, theoretically, it should not occur in Wh-questions and subordinate clauses.

This paper will examine the various uses of ma. By examining its use in casual conversation, it will show how these syntactically incompatible uses of ma are not conflicting at the discourse level.

**DISCIPLINE:** Linguistics.

**FIELDWORK LOCATION:** South Indian Lake, Manitoba.

86-082 **STARKS, D.J.** (1986). "English Borrowing in Woods Cree". Northern Studies Group Student Symposium, October 1986.

**ABSTRACT / DESCRIPTION:**
This paper classifies the types of English words that have been borrowed into Woods Cree. It also examines instances of code-switching.

**DISCIPLINE:** Linguistics.

**FIELDWORK LOCATION:** South Indian Lake, Manitoba.

86-083 **STARKS, D.J.** (1986). Language Change in Woods Cree. Paper for Native Language Instructors Program, Lakehead University, Thunder Bay, June 1986.

**ABSTRACT / DESCRIPTION:**
This paper examines some of the linguistic changes that are occurring at South Indian Lake. The paper focuses on phonological and morphological changes between older and younger speakers in this community.

**DISCIPLINE:** Linguistics.

**FIELDWORK LOCATION:** South Indian Lake, Manitoba.

86-084 **STARKS, D.J.** (1986). South Indian Lake Vocabulary. Dictionary, 127 p., September 1986.

**ABSTRACT / DESCRIPTION:**
The South Indian Lake Vocabulary consists of 3000 lexical entries. The entries are provided in the third singular form. The grammatical classification of each entry is also given.

**DISCIPLINE:** Linguistics.

**FIELDWORK LOCATION:** South Indian Lake, Manitoba.

86-085 **STARKS, D.J.** (1986). The Concept of a Dialect: The Case of Woods Cree. Paper, 18th Algonquian Conference, Winnipeg, October 1986.

**ABSTRACT / DESCRIPTION:**
The Woods Cree dialect is identified by the presence of a single phoneme / /. A synopsis of the basic phonological and morphological structures of South Indian Lake and Pukatawagan, two Woods Cree communities, will be presented. The differences and similarities between the two communities will be discussed in light of three generations of speakers in each community.

It will be argued, that although there are a number of similarities in the speech of the older speakers in both of these communities, major linguistic changes have taken place in the speech of the younger speakers in the two communities. So although one could argue that the two communities have variants of the same dialect for the older generations, one cannot so easily assume that the younger speakers of these communities speak the same dialect or, at South Indian Lake, that even the younger and older speakers of the same community speak the same dialect.

**DISCIPLINE:** Linguistics.

**FIELDWORK LOCATION:** South Indian Lake and Pukatawagan, Manitoba.

86-086 **STARKS, D.J.** (1986). "What and Why in Woods Cree". *Algonquian and Iroquoian Linguistics*, 11: 6-7.

**ABSTRACT / DESCRIPTION:**
The singular form of the Cree word for 'what' can be either *kekwan* or *kekway*, depending on the dialect. In Plains Cree, the word is *kekway* or *kikway* (Wolfart 1973:35, Bloomfield 1930), while in Moose and Swampy Cree, the word for 'what' is *kekwan* (Ellis 1983:476, Voorhis 1972:15-1). The distinction is lexical and not phonological since in Moose Cree, an /l/ dialect, the word for 'what' is *kekwan*, not **kekwal*, and in Atikamekw, the word for 'what' is *kekwan* nor **kekwar* (Béland 1978:444). In none of the Cree dialects described to date are the words for 'what' and the words for 'thing' lexically distinct. Wolfart (1973:36) has noted however several phonological, morphological and syntactic distinctions between the two words in Plains Cree, the most interesting of which is the "constrasting stress patterns in the inanimate singular forms" (Wolfart 1973:35 fn.53).

**DISCIPLINE:** Linguistics.

**FIELDWORK LOCATION:** South Indian Lake, Manitoba.

86-087 **STARKS, D.J.** (1986). *Woods Cree Texts - South Indian Lake*. Text, 132 p., September 1986.

**ABSTRACT / DESCRIPTION:**
The texts were collected in Cree. English translations are also provided. This collection of texts describes present and past life at South Indian Lake. The texts cover a wide range of topics ranging from socialization practices to subsistence strategies.

**DISCIPLINE:** Linguistics.

**FIELDWORK LOCATION:** South Indian Lake, Manitoba.

## McGILL UNIVERSITY

86-088 **ADAMS, J.** (1986). Native People and Conservation Areas in the North. B.A. Thesis, Faculty of Arts.

**ABSTRACT / DESCRIPTION:**
Both conservationists and Native groups have an interest in ecological conservation. This suggests a potential for either constructive collaboration or for conflict. Conflict arises between conservationists and Native peoples when the means chosen by one are perceived as infringing upon the rights of the other. This case study of the national park proposal on the East Arm of Great Slave Lake, N.W.T., demonstrates the origin and nature of one such conflict. The hypothesis explored is that the long term goals of the Dene and Parks Canada coincide with the establishment of a conservation area but the short term means of achieving this are divergent. Literature concerning issues of Native peoples and conservation recognizes the need for accommodation and involvement of local people in wilderness reserves and proposes means for minimizing friction that surround the park establishment process. Field work and written documentation reveal the dimensions of the conflict between Parks Canada and the Dene of Snowdrift. The goal to protect the wilderness character of the area from industrial development may be basis for collaboration. Parks Canada's incentives for cooperation lie in the strong suitability of the proposed area for park development and the political and financial necessity of obtaining local support. Dene incentives are the potential for expanded lands secured for traditional land use and economic development opportunities. A complex of obstacles to reconciliation includes factors of: other problems facing the community; circumspection towards non-native government; and lack of measures allowing local control.

**DISCIPLINE:** Human Geography.

**FIELDWORK LOCATION:** Great Slave Lake, N.W.T.

86-089 **DESROCHERS, D.T. and H.B. GRANBERG** (1986). An Investigation of Woodland Snow Thermal Regime in the Schefferville Area, Northern Québec. Paper, 43rd Eastern Snow Conference, Hanover, N.H., June 5-6, 1986, 5 p.

**ABSTRACT / DESCRIPTION:**
Field investigations concentrated on the verification of instruments and datalogging systems that were installed on an experimental plot during fall 1985. Snow temperatures, ground temperatures, snow-ground interface temperatures and soil moisture were intensively monitored four times a day to accommodate for diurnal fluctuations and datalogging capacity. Air temperature, relative humidity, soil heat flux, wind

velocity and direction, and radiative and vapor barrier components were monitored. Field investigations also included spatial surveys of snow temperature measurements and cross-section analyses of the density stratification for designated grids adjacent to the experimental plot. Standard methods were used to determine stratigraphy, depth and water equivalent. Densities were obtained at vertical intervals of 5 cm, using a Swedish snow density sampler and grain sizes for each density sample were determined through the sieve analysis method.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Schefferville, Northern Québec.

86-090 **DITATA, M.** (1986). Une étude des tourbières de la région de Schefferville. Rapport de recherche.

**RÉSUMÉ / DESCRIPTION:**
Une description détaillée de trois tourbières subarctiques a été faite dans la région de Schefferville. Les buts de cette description étaient de connaître la distribution et l'agencement de divers caractères de la tourbe. En plus, l'aspect évolutif des tourbières selon les différentes topographies et lithologies est considéré.
À partir de cartes détaillées des sites d'études, de nombreaux transects ont été établis afin d'obtenir un recouvrement complet des sites. L'échantillonnage s'est fait selon les unités homogènes de végétation le long des transects. Une description détaillée des profils de sol a suivi celle de la description générale des environs des sites d'échantillonnage. Les horizons ont été décrits selon leur épaisseur, leur degré de décomposition, couleur et type de matériel. Des mesures de pH ont aussi été prises ainsi que plusieurs remarques. Des échantillons de tourbe ont été rapportés pour effectuer des analyses plus détaillées telles le contenu en cendre et en fibres, la capacité d'échange cationique, les acides humiques et fulviques... Toutes ces informations serviront à la conception d'une vision tri-dimensionnelle des lieux ainsi qu'à l'élaboration d'une équence évolutive pour chacune des tourbières.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Schefferville, Nouveau-Québec.

86-091 **DOIDGE, D.W.** (1986). Beluga Population Ecology in Northern Québec. Report.

**ABSTRACT / DESCRIPTION:**
The purpose of the fieldwork was to gather additional biological specimens from the Inuit harvest of beluga whales in northern Québec. These specimens provide information regarding

the population ecology of this whale stock. Thin sections of teeth and lower jaws are read to estimate the animal's age, reproductive tracts provide information on reproductive status. In females, pregnancy rates are determined by counting ovarian corpora. Standard measurements of total body length, girth and blubber thickness were used to assess animal size and condition. Relative cohort size was determined by monitoring the herd composition of beluga in the Nastapoka river. Water temperature in the Nastapoka estuary was recorded to document thermal habitat.

**DISCIPLINE:** Environmental Sciences/Ecology.

**FIELDWORK LOCATION:** Nastapoka River, Northern Québec.

86-092 **GRANBERG, H.B. and R. WENER** (1986). Snow Grain Distribution Patterns in a Subarctic Snowpack. Paper, 43rd Eastern Snow Conference, Hanover, N.H., June 5-6, 1986.

**ABSTRACT / DESCRIPTION:**
An intriguing pattern of grain size variations has been observed in snowcover profiles at Schefferville, northern Québec. Measurements of grain size distributions were obtained at closely spaced vertical intervals in wind sheltered snow covers using an automated sieve shaker at low temperatures (< -15 degrees C) were measured. A gradual variation in grainsize distributions with depth was observed. This variation appears to be relatively independent of observable layer structures in the snow cover. The pattern is closely repeatable from one site to another and from one year to the next. One observable trait is that although there is usually a maximum in the largest grain size fractions (>4 mm) at the snow/ground interface, at the same level there is also a marked increase in the finer size fractions (<1 mm). A raised maximum of grain sizes >1 mm occurs at some height (usually around 10 - 40 cm) above the snow/ground interface. The cause of this pattern is, so far, unknown.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Schefferville, Québec.

86-093 **GRANBERG, H.B. ET AL.** (1986). Studies of Snowcover - Permafrost Relationships at Schefferville. 43rd Eastern Snow Conference, CRREL, Hanover, N.H., June 5-6, 1986, 5 p.

**ABSTRACT / DESCRIPTION:**
The snowcover has long been recognized as one of the main factors controlling permafrost distribution in the Schefferville area. The details of this relationship are, however, not well known. A research program is now underway to examine the relationship between snow cover and permafrost

distribution in greater detail. The program involves digital modelling of permafrost - terrain relationships and detailed spatial/temporal monitoring of surface energy balance factors and indices such as snow stratigraphy, snow temperature profiles, snow/ground interface temperatures, spectral attenuation of solar radiation by the snow cover and net radiation in different terrain situations. The paper describes the background to the program, outlines the studies currently in progress and gives a brief description of equipment that has been developed or otherwise been made available to the project.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Schefferville, Northern Québec.

86-094 **HAMMILL, M.** (1986). Ringed Seal Ecology in Barrow Strait. Research Report.

**ABSTRACT / DESCRIPTION:**
The objectives of this study were: to relate Ringed Seal densities and distribution to features of their habitat, such as water depth, snow depth and ice thickness; to examine age structure, reproductive rates and health status of the Ringed Seal population in Barrow Strait; determine if underwater vocalization rates can be used to evaluate Ringed Seal abundance; measure the thermal benefits of the subnivian lairs formed by Ringed Seals.

**DISCIPLINE:** Environmental Sciences/Ecology.

**FIELDWORK LOCATION:** Barrow Strait, N.W.T.

86-095 **INGRAM, R.G., K. SHIRASAWA and S. LEPAGE** (1986). "Mixing Processes at the Ice-Water Interface and their Effects on Algeal Productions". EOS, 67(44): 984.

**ABSTRACT / DESCRIPTION:**
Long period studies of mixing at the ice water interface in Hudson Bay have shown the upward nutrient flux to the interface depends on ice type and distribution, current amplitude and buoyancy characteristics in the boundary layer adjoining the sea ice. Closely spaced vertical profiles of temperature, conductivity and nutrients, as well as moored and profiling current meter data are used to estimate the importance of dynamical processes on algeal production at the interface. The introduction of brackish plume waters late in the growth season leads to increased stability and limits nutrient input to the interface. Potential effects of increased freshwater discharge from planned hydroelectric development in Hudson Bay on under-ice algal production is discussed.

**DISCIPLINE:** Oceanography.

**FIELDWORK LOCATION:** Hudson Bay, Nouveau-Québec.

86-096 **KINGSBURY, C.** (1986). Freeze-up of Subarctic Peatlands and its Effects on the Ion Movements in the Past. Field Report.

**ABSTRACT / DESCRIPTION:**
During the freeze-up of 1984, a general pattern was observed in the peatlands, with the nutrients and ions being drawn towards the freezing front from the peat water. This process was greatly enhanced during the winter of 1984-85 (due to a "poor" snow year in the study region), with greater freeze depths being recorded in the peatlands than in previous years. Also during freeze-up, a dehydrated layer was observed under the freezing peat for both types of peatlands (Aries fen: nutrient rich; Capricorn bog: nutrient poor). This layer increased in depth with increased ice formation. This study dealt with the freeze-up of the peatlands (both thermal and chemical) to see if the same general pattern occurs during a more typical winter.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Schefferville, Québec.

86-097 **LEPAGE, S.** (1986). La dynamique côtière et la variabilité saisonnière en milieu subarctique. Communication, 54$^{e}$ Congres de l'ACFAS, Montréal, mai 16, 1986.

**RÉSUMÉ / DESCRIPTION:**
Une étude océanographique entreprise durant l'hiver de 1985 dans la région côtière à proximité de l'embouchure de la Grande Rivière de la Baleine (Baie d'Hudson) a pour objet l'étude de la dynamique de circulation reliée à la débâcle printanière des glaces en milieu sub-arctique. Des données recueillies au cours des dix dernières années dans le secteur est de la Baie d'Hudson et de la Baie James ont révélé l'importance du couvert de glace comme agent saisonnier responsable d'importantes modifications quant à la circulation et au mélange des eaux de surface reliés à l'écoulement des rivières dans ces régions. Bien que l'écoulement hivernal soit fortement réduit comparativement aux valeurs estivales, la zone d'influence des rivières sur le milieu marin (le panache) s'accroît en superfécie horizontale et en épaisseur, ce phénomène étant relié à une plus grande stabilité des masses d'eau sous couvert de glace. L'étude de la période de débâcle est donc de première importance dans la compréhension des mécanismes hydrodynamiques reliés au mélange et à l'écoulement des eaux de surface en milieu nordique.

**DISCIPLINE:** Oceanographie.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Grande Rivière de la Baleine, Nouveau-Québec.

86-098 **LEPAGE, S.** (1986). Modification du panache de la Grande Rivière de la Baleine lors de la débacle des glaces. Communication, Conference nationale des étudiants en études nordiques, Ottawa, 17-19 novembre, 1986.

**RÉSUMÉ / DESCRIPTION:**
Au cours des années 1985 et 1986, une recherche océanographique ayant pour objet d'études la dynamique de circulation côtiere, a été menée près de l'embouchure de la Grande Rivière de la Baleine, baie d'Hudson. Récemment, l'importance du couvert de glace comme agent modificateur du mélange de l'eau douce avec l'eau salée ambiante fut mise en évidence dans le secteur est des baies James et d'Hudson. La présente étude a pour but la description du panache de la Grande Rivière de la Baleine durant la débâcle des glaces. Les observations montrent que sous le couvert de glace hivernal, la faible turbulence résulte en une dilution très lente de l'eau douce, ce qui produit une zone étendue d'eau saumâtre dans la région côtière. L'eau douce s'accumule jusqu'à la débâcle qui a lieu fin mai-début juin. À mesure que la glace se résorbe, l'effet éolien se fait directement sentir sur la couche d'eau superficielle, produisant ainsi un mélange accru avec la couche sous-jacente. Le résultat global est un rétrécissement du panache de la rivière alors que le débit estival est cinq fois supérieur que celui d'avant débâcle.

**DISCIPLINE** Océanographie.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Grande Rivière de la Baleine, Québec.

86-099 **McCAFFREY, M.T.** (1986). A Report on Archaeological Research in the Schefferville Region, Summer 1985. Field Report.

**ABSTRACT / DESCRIPTION:**
This project was an important part of my doctoral research on lithic raw material procurement and exchange networks in Québec prehistory. The fieldwork conducted during the summer of 1985 sought to better document the prehistoric utilization of chert sources in the Schefferville region. A survey of lakes located to the north of Schefferville resulted in the discovery and excavation of a prehistoric occupation site. Further reconnaissance work based on geological maps produced three new workshop areas associated with chert outcrops. Finally, a workshop site discovered last summer was partially excavated. The materials recovered during last summer's fieldwork are currently under analysis.

**DISCIPLINE:** Archaeology.

**FIELDWORK LOCATION:** Schefferville, Northern Québec.

86-100 **McCAFFREY, M.T.** (1986). Lithic Procurement and Exchange Networks: Understanding Lithic Raw Material Variability on Prehistoric Sites in the Québec Subarctic. Ph.D. Proposal.

**ABSTRACT / DESCRIPTION:**
The purpose of this doctoral research is to study lithic raw material procurement and exchange among the prehistoric groups who occupied or seasonally exploited the northern interior of Québec-Labrador. This involved identifying source deposits for lithic materials used by various prehistoric groups, and locating habitation sites where flaked stone materials were transported and employed. The work thus combined both geological and archaeological survey techniques.

**DISCIPLINE:** Archaeology.

**FIELDWORK LOCATION:** Schefferville, Nouveau-Québec.

86-101 **ROSS, P.** (1986). Relations North-South. Field Research Report.

**ABSTRACT / DESCRIPTION:**
This project was part of a long-term research on native urbanization. It was focused on the relationship between the urban natives and the community of origin. This research project was also an examination of the efficiency and effects of the need to send patients out of the community to hospitals on both the patient and the household from which he or she was removed. The information on which the report was based was gained through interviews with members of twenty households over a period of one month.

**DISCIPLINE:** Anthropology.

**FIELDWORK LOCATION:** Goose Bay, Labrador.

86-102 **ROSS, P.** (1986). Working on the Margins: A Labour History of the Native Peoples of Northern Labrador. Ph.D. Thesis, Department of Anthropology.

**ABSTRACT / DESCRIPTION:**
This study is an analysis of the changes in the social formations of the Inuit and Innut populations of northern Labrador as a consequence of interaction with western capital, from approximately 1500 to the present. It is concluded that the significant changes which have taken place can only be explained if these are placed within a unified theoretical framework that combines both macro and micro levels of analysis. This requirement stems from the impact of the global

nature of capital and the specific characteristics of the indigenous social formations in northern Labrador. To facilitate the analysis the history of the penetration of capital into northern Labrador has been divided into two major political-economic periods: mercantile: 1500-1926 and welfare state: 1926-present. The former is further subdivided into two phases: the competitive phase, 1500-1763, during which no one European power held sway, and the monopoly phase, 1763-1926, during which either Britain or one of its colonies was juridically the sole European authority. Finally the welfare period, 1926-present, which includes a transitional period, 1926-1942, is characterized by the increasing importance of wage labour and state agencies. Each of these periods is examined in terms of the internal and external relations between and amongst the European and native social formations which led to mutual modifications.

**DISCIPLINE:** Anthropology.

**FIELDWORK LOCATION:** Northern Labrador.

86-103 **SCHULTZ, S.** (1986). Caribou Commercialization in Labrador. Honors Thesis.

**ABSTRACT / DESCRIPTION:**
The transition in the status of caribou in the north in conjunction with the growing political activism and planning capability of northern natives has resulted in a proliferation of local initiatives in caribou exploitation. This project deals with the study of current use practices, use expectations, and management concerns.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Northern Labrador.

86-104 **SHARPE, M.** (1986). Post-Fire Succession in the Lichen Woodlands of the Schefferville Area, Québec. B.Sc. Thesis, Department of Geography.

**ABSTRACT / DESCRIPTION:**
The post-fire recovery sequence in 21 spruce-lichen woodland and spruce-moss stands in the Schefferville area, Québec is described. Black spruce was the dominant species in the woodlands (69% of the basal area) while white spruce was more abundant in the closed forests (67%). Seven of the woodland stands were over 150 yrs age, while four were over 200 yrs, indicating a relatively long fire cycle.
Early successional sites (up to 150yrs) were characterised by Ledum groenlandicum, Betula glandulosa, Vaccinium angustifolium, Cladonia deformis and a relatively high proportion of Larix laricina and Picea mariana. Mature woodlands were dominated on the ground by Cladina stellaris,

with *Cladian mitis*, *Cladina rangiferina*, *Empetrum nigrum*, *Stereocaulon paschale*, and *Dicranum fuscescens* also present. In the spruce-moss stands, the lichens are replaced by the mosses *Hylocomium splendens*, *Ptilium crista castrensis*, and *Polytrichum sp.*
The lichen woodlands in the Schefferville area maintain their open structure despite the low fire frequency. Some of the spruce-moss stands may have succeeded from woodlands through increasing canopy closure, but most probably represent fast growth and early divergence from the woodland successional sequence.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Schefferville, Québec.

86-105 **SKULSKI, T. and D. FRANCIS** (1986). "On the Geology of the Tertiary Wrangell Lavas in the St. Clare Province, St. Elias Mountains, Yukon". *Yukon Geology*, Vol. 1: Exploration and Geological Services Division, Yukon, Indian and Northern Affairs, p. 161-170.

**ABSTRACT / DESCRIPTION:**
The Wrangell lavas in the St. Clare province of southwestern Yukon are part of the large Wrangell volcanic belt that has been active throughout the Late Cenozoic. These lavas have erupted in a transitional tectonic environment that reflects regional transgression along the Queen Charlotte transform-Fairweather-Totschunda Fault System and subduction of the Farallon Plate beneath North America. The volcanic province is composed of subalkaline basalt (31%), basaltic andesite (30%), andesite (21%), dacite (2%) and nepheline normative basalt (16%). The hypersthene normative basalt is (in order of appearance) spinel-olivine-plagioclase ± Fe-Ti oxide ± clinopyroxene phyric, whereas andesite contains plagioclase, Fe-Ti oxide, clinopyroxene, ± orthopyroxene phenocrysts, and dacite and intrusive latite contain phenocrysts of plagioclase, ± clinopyroxene, hornblende, ± biotite, ± sanidine. The nepheline normative rocks, where porphyritic, contain phenocrysts of olivine, plagioclase and hornblende. In the central part of the map area, the lowermost flows are nepheline normative basalt that is interbedded with clastic sediments and is overlain by basaltic andesite, andesite and volcanic conglomerate. This succession is overlain by basalt interbedded with clastic sedimentary rocks and pyroclastic rocks. In the southern part of the map area, alkaline basalt occurs at this stratigraphic level. The uppermost Wrangell lavas are andesitic with minor interbedded volcaniclastic rocks. The hypersthene normative lava of the St. Clare province are transitional in terms of their $Na_2O+K_2O/SiO_2$ ratios between alkaline and subalkaline magma series and in terms of their $FeO^*/MgO$ versus $SiO_2$ ratios between tholeiitic and calc-alkaline series. Chemical

composition of these rocks reflects the unique tectonic setting within which they are found.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** St. Clare Province, St. Elias Mountains, Yukon.

86-106 **SKULSKI, T. ET AL.** (1986). A Continental Rift Model for the La Grande Greenstone Belt. Research Report.

**ABSTRACT / DESCRIPTION:**
Stratigraphic relationships and the geochemistry of volcanic rocks constrain the nature and timing of the tectonic and magmatic processes in the pre-deformational history of the La Grande greenstone belt in the Superior Province of north-central Québec. With the exception of a locality in the western part of the belt the lowermost supracrustals in this belt are obscured by syntectonic granitoid intrusives. The supracrustal succession in the western part of the belt consists of a lower sequence of immature clastic sediments and mafic volcanoclastics, overlain by pillowed and massive basalts. Further east, along tectonic strike, a lower sequence of mafic volcanoclastic and immature clastic sediments is overlain by a thick sequence of pillowed and massive basalts, and resedimented coarse clastic sediments and banded iron formation. These are overlain by massive basaltic andesites, andesites and intermediate volcanoclastics intercalated with immature clastic sediments. In contrast, in the eastern part of the belt lenses of felsic volcanics and volcanoclastics occur at the base of the succession and pillowed and massive basalts are overlain by komatiites at the top.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** La Grande Greenstone Belt, Nouveau-Québec.

**86-107 GEORGE, M.** (1986) *Microclimatic Control on Vegetation Growth Rates in the James Bay Lowlands*. B.Sc. Thesis, Department of Geography.

**ABSTRACT / DESCRIPTION:**
The growth rates of two sedge species, *Carex paleacea* and *Carex mackenzii*, growing in the salt marches of southern James Bay, are related to the climatic variables of solar and net radiation; latent, sensible and ground heat fluxes; the Bowen ratio; and air and soil temperatures, for the 1985 growing season. *C. paleacea* grew twice as tall and accumulated 2.5 times the biomass as did *C. mackenzii*. There was a distinct period of grand growth which occurred at different times for each species. For *C. mackenzii* the grand growth period spanned less than one-third of the growing season but produced two-thirds of the total biomass accumulation. The interval of grand growth was less concentrated for *C. paleacea*. *C. paleacea* shows a substantial growth response to soil and air temperatures, but for *C. mackenzii*, this was subdued. Various indicators suggest that *C. paleacea* is highly productive in southern James Bay and *C. mackenzii* is moderately productive.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** James Bay Lowlands, Nouveau Québec.

**86-108 PRICE, J.** (1986). *Wetlands as Waste Repositories: Solute Transport in Peat*. Paper, National Student Conference on Northern Studies, Ottawa, 17-19 November, 1986.

**ABSTRACT / DESCRIPTION:**
The huge wetland reserves of the temperate and sub-arctic zones are increasingly viewed as potential low level toxic waste repositories; thus their ability to assimilate these wastes is considered. Processes which govern the transport of a non-reactive solute through peat are examined. A series of chloride solute breakthrough experiments was carried out to determine the nature and magnitude of chloride transport in peat, using undisturbed peat columns collected in the frozen state from a southern James Bay wetland. A chloride solution was introduced into a permeameter, and the chloride content of the outflow was determined and plotted against time to produce breakthrough curves. These curves indicated that retardation of chloride occurred. Higher velocity trials produced less dispersion than those at low velocity, which is opposite to what occurs in mineral soils. Retardation of chloride was considered to be due to the temporary entrapment of the solute in closed peat pores. In higher velocity trials less time was available for inward diffusion and for the loss of solute to the closed pores, hence less dispersion was evident. The

results indicate that solutes in general move through peat more slowly than through mineral soils with the same true porosity, and that dispersion caused by uptake of the solute will reduce the solute concentration downstream of the source. Although this property of peat may make some wetlands amenable for use as low level toxic waste disposal sites, the influence of their complex and variable hydrological regime cannot be overlooked.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** James Bay, Québec.

86-109 **ROULET, N.T. and M.K. WOO** (1986). "Hydrology of a Wetland in the Continuous Permafrost Region". Hydrology, 89: 73-91.

**ABSTRACT / DESCRIPTION:**
This study examines the hydrological system of a northern wetland in the continuous permafrost region. Water balance computation quantifies the relative importance of various hydrological processes including snowmelt, rainfall, inflows, evaporation, surface and subsurface outflows. The existence of this wetland is closely related to a lake upslope which provides the bulk of the water input. The ability of northern wetlands to absorb water input is limited by the frozen ground and the high specific retention of the peat, rendering the wetland a poor regulator of streamflow. Storage capacity increases in summer as evaporation reduces the moisture content of the peat. Subsurface flow remains insignificant because of the low hydraulic gradient and conductivity. Thus, when the water table lies within the peat layer, there is little wetland contribution to streamflow but when the water table lies above the ground during some intense storms, streamflow is rapidly increased by surface flow on the wetlands.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Baker Lake, N.W.T.

86-110 **ROULET, N.T. and M.K. WOO** (1986). "Low Arctic Wetland Hydrology". Revue Canadienne des Ressources au Eau, 11: 1 November, 1986.

**ABSTRACT / DESCRIPTION:**
Many fens occur in the low arctic of Canada, relying on rainfall and lateral inflow to maintain saturated conditions throughout the thawed season. A study in central Keewatin demonstrates that such wetlands discharge most of the snow meltwater as surface runoff during spring when the ground is frozen. In summer, evaporation and wetland outflow are maintained by rainfall and lateral inflow. Three sources of inflow are recognized; lakes, streams and late-lying snowbanks. The fens of the low arctic can be distinguished clearly in

aerial photographs. This offers an easy method of mapping wetlands in the Canadian north.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Baker Lake, N.W.T.

86-111 **ROULET, N.T. and M.K. WOO** (1986). "Wetland and Lake Evaporation in the Low Arctic". Arctic and Alpine Research, 18: 195-200.

**ABSTRACT / DESCRIPTION:**
Evaporation from wetland and lake surfaces in the continuous permafrost region of the Low Arctic was studied using an energy balance Bowen ratio approach and lysimeter measurements respectively. Daily evaporation was also estimated using the Priestley-Taylor model. Over the summer, mean evaporation from the wetland and lake were similar, but day-to-day variation was large at times. Differences of available energy and surface roughness between the lake and wetland surface produce a larger Priestly-Taylor value for wetland evaporation. The approach presented in this paper can be used to estimate evaporation for wetland and lake surfaces in the low arctic region.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Baker Lake, N.W.T.

86-112 **DILLINGER, R.E., J.M. GREEN and T.J. BIRT** (1986). The Taxonomic Status of Coregonus autumnalis and C. laurettae and an Evaluation of the Life History Strategies of Northern Whitefishes (Family Salmonidae, Sub Family Coregonine). Paper, Conference Common Strategies of Anadromous and Catadromous Fish, Boston, Mass., March 9-13, 1986.

**ABSTRACT / DESCRIPTION:**

The present study is a re-evaluation of the criteria for separating the two species, using a larger number of samples taken from a wide variety of locations. As well, the life history tactics of both species are compared with those of other coregonine fishes and with the predictions made by life history theory. Discriminant function analysis has been used to group the two species on the basis of morphometric measurements and meristic counts. In this analysis approximately thirty percent of the fish were grouped incorrectly. This suggests that, on the basis of morphometry and meristics, classification of the two species cannot be done with a high rate of certainty and brings into question the validity of using modal counts of gill rakers as a taxonomic criterion.

A comparison of the tactics of these anadromous species with the non-anadromous Prosopium cylindraceum substantiates the presictions of life history theory. The non-anadromous fish matures earlier, grows faster, is less fecund and has smaller eggs. As well, P. cylindraceum shows the predicted intraspecific pattern of life history variation with change in latitude.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Beaufort Sea, N.W.T.

86-113 **EVANS, D.J.A. and R.J. ROGERSON** (1986). "Glacial Geomorphology and Chronology in the Selamiut Range/Nachvak Fiord Area, Torngat Mountains, Labrador". Canadian Journal of Earth Sciences, 23: 66-67.

**ABSTRACT / DESCRIPTION:**

The Selamiut Range of the Torngat Mountains, northern Labrador, rises to over 1700 m above sea level and constituted a barrier to eastward-flowing Laurentide ice during former glaciations. Local and regional ice has left an assemblage of landforms exhibiting cross-cutting relationships. Three glacial phases are recognized in the area. The oldest and most extensive (the Ivitak phase) is marked by high-elevation till deposited when regional and local ice coalesced. At this time regional ice flowed eastward down Nachvak Fiord while interfiord highlands extended above the ice as nunataks. During a late Ivitak phase a large proglacial lake was dammed in the lower McCornick Valley at 80 m above sea level when regional and local ice in Nachvak Fiord blocked the local drainage. During the subsequent Nachvak phase, lakes were dammed in the lower McCornick Valley at 67 and 53 m above sea level for ca. 3000 years by Laurentide ice alone. The Superguksoak had three subphases when local cirque glaciers expanded up to 5 km beyond their present limits. The Holocene marine limit around 33 m reflects the small ice load influencing Nachvak Fiord, or very late deglaciation of the Ivitak Cove area. The chronology of these glacial and proglacial deposits is based on their spatial relationships as well as pedology and lichenometry. Seventy-nine soil pits excavated to the base of the Cox horizon indicate the relative duration of weathering since deglaciation.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Torngat Mountains, Labrador.

86-114 **GILKINSON, K.D., J.M. GREEN and D.W. KEATS** (1986). "Shallow Water Marine Benthic Molluscs (Bivalvia, Gastropoda, Amphineura) Collected in the Vicinity of Nuvuk Islands, Northwest Territories, Canada". Naturaliste canadien, 113: 83-89.

**ABSTRACT / DESCRIPTION:**
A survey of the shallow water marine benthic molluscs, from the Nuvuk Islands region near the southwestern entrance to Hudson Strait, was conducted using SCUBA in August 1983. Twenty-two gastropod, eleven bivalve and two amphineuran species were collected. Gastropods were most numerous on macrophytes in channels among the islands. Epibenthic bivalves utilized macrophytes as settlement substrates. Bivalve species recorded in the present study are consistent with expectations based upon the role which Hudson Strait plays as a boundary, with intermixing, between polar (arctic) and mixed faunal zones. Gastropod and amphineuran species collected in the study area are considered to be widespread in arctic Canada or have extensive arctic-atlantic distributions, whereas bivalves belong to distinct faunal provinces although extensive species ranges can be associated with certain subarctic provinces.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Nuvuk Islands, N.W.T.

86-115 **HEDDERSON, T.A.** (1986). The Biogeographical Significance of the Torngat Mountains, Northern Labrador. Paper, National Student Conference on Northern Studies, Ottawa, 17-19 November, 1986.

**ABSTRACT / DESCRIPTION:**
While the bryophyte flora of the Torngat Mountains of northernmost Labrador is composed primarily of circumpolar arctic or boreal species with wide distributions, many moss and liverwort species have distributional limits there. Species of high arctic affinity, e.g. *Oligotrichum falcatum*, have their southern limits in the Torngat, while several boreal or temperate species, e.g. *Hylocomium pyrenaicum*, occur there at their northern limit. There is also a large disjunct bryophyte element in the Torngat Mountains, comprising mainly montane species with a broad range in western North America but occurring in only a few localities in eastern North America, e.g. *Andreaea nivalis*, *Hydrogrimmia mollis*, *Marsupella revoluta*. Previously undescribed species of mosses have recently been discovered at Nachvak Fiord; these apparent endemics are known only from the highest parts of the Torngat. The disjunct and endemic bryophyte elements at Nachvak and elsewhere in the Torngat Mountains provide strong botanical evidence to support the theory that several high plateaus there remained ice-free during the Wisconsin Glaciation. Thus the area could have been an important refugium for plant and animal species, and the Nachvak Fiord region may be particularly critical in this respect.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Torngat Mountains, Northern Labrador.

86-116 **HEDDERSON, T.A. and G.R. BRASSARD** (1986). "The Bryophytes of Nachvak, Northern Labrador, with Additional Records from Saglek". *Canadian Journal of Botany*, 64: 2028-2036.

**ABSTRACT / DESCRIPTION:**
One hundred and thirty-four species of mosses and 18 species of liverworts are reported from Nachvak Fiord, and 22 mosses are reported from Saglek Fiord. Nineteen of the mosses had not previously been reported from Labrador, and 49 are new to northern Labrador. Seven of the liverworts are new to Labrador. Brophyte species new to eastern North America are *Anastrophyllum assimile*, *Hygrophypnum cochlearifoliur* (possibly), and *Lophozia cavifolia*. The record of *Lophozia cavifolia* represents an addition to the hepatic flora of North America (excluding Greenland). The North American distributions of *Hydrogrimmia mollis*, *Marsupella revoluta*, and *Trichostomum arcticum* are mapped. The high incidence of disjunct species in the bryoflora of the Torngat Mountains is discussed in relation to the proposed glacial history of the area.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** Nachvak, Northern Labrador.

86-117 **LANGILLE, A., E. BURDEN, B. SEARS and D. HOLLOWAY** (1986). "Geological Investigations of Cretaceous Strata beneath Cape Dyer Basalts (Paleocene), Baffin Island, District of Franklin". Geological Survey of Canada, Paper 86 - A, p. 483-488.

**ABSTRACT / DESCRIPTION:**
Mesozoic and Cenozoic strata on the coast of Baffin Island near Cape Dyer provide (1) information about the potential for offshore hydrocarbons and (2) evidence to constain the timing of rifting of Baffin Bay. Questionable megafloral evidence in deltaic sand bodies suggests the assignment of outliers to the Paleocene. In contrast, palynology suggests an Albian age.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Cape Dyer, Baffin Island, N.W.T.

86-118 **LEE, E.** (1986). Discrimination of Two Stocks of Atlantic Cod, Gadus morhua, off St. Lewis and Makkovik, Labrador. B.Sc. Thesis, Department of Biology, 56 pp.

**ABSTRACT / DESCRIPTION:**
This study was undertaken to ascertain if two separate cod stocks exist off the coast of Labrador between the areas of Makkovik (NAFO subdivision 2H) and St. Lewis (NAFO subdivision 2J) which up to this time have been considered as part of the southern Labrador - eastern Newfoundland stock complex (NAFO subdivisions 2J+3K+3L). A number of biological factors were examined: length-age, weight-age, and length-weight relationships, parasites of the digestive tract (Nematoda, Trematoda, and Acanthocephala), parasites of the gall bladder (Myxosporida), kfactor and food and feeding. The results suggest a significant difference between the cod populations of the two sites in terms of number of acanthocephalans, nematodes and myxozoans, and of the total number of intestinal parasites. This indicates the presence of two separate cod stocks in the area encompassing the two regions. Results of the food and feeding data showed shrimp and capelin as the dominant food types of both areas during the sampling period. The length-age-weight relationships provided little insight in stock discrimination. However, cod of the ten year and older age category were found to be large at Makkovik than at St. Lewis. Kfactors were found to be significantly different between the two sites. Additional sampling north, south, and midway between the Makkovik and St. Lewis sites is needed to clearly discriminate cod stocks in this area.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** St. Lewis and Makkovik, Labrador.

86-119 **McALEESE, K.** (1986). Archaeological Fieldwork at George Cartwright's Summer Camp in Southern Labrador. Anthropology Seminar Series, Dec. 3, 1986.

**ABSTRACT / DESCRIPTION:**
Archaeological investigation of the remains of a late eighteenth century fishing/sealing/fur trapping settlement near Cape Charles, Labrador was directed by the N.S.T.P. grant recipient. A number of structures, including a dwelling house, store house and servant's quarters, are described in the journal of the settlement's principal merchant. The archaeological features which represent these structures were distributed within an area of approximately 200 metres by 150. These were mapped and partially excavated during ten weeks of fieldwork.
The recovered artifacts, numbering approximately 7500, included nails, numerous fragments of bottle, lantern and beverage glass, as well as ceramics, gun flints, various iron and copper items, and organic material such as leather, feathers and a small faunal sample. Preliminary analysis of the artifacts, and the relatively close match of structural dimensions recorded in the merchant's journal and in the ground, suggests that most and probably all the features represent a single late 18th century occupation. The full results of this research, which may offer new detail on the architectural, economic and settlement history of Labrador, will be described in the author's M.A. thesis.

**DISCIPLINE:** Archaeology.

**FIELDWORK LOCATION:** Southern Labrador.

86-120 **MOULTON, J.** (1986). Characterizing Terrain Features from Landsat MSS Unsupervised Classification of the Southwest Yukon with Albedo Values. B.A. (Honours) Thesis, Department of Geography, 46 p.

**ABSTRACT / DESCRIPTION:**
Landsat digital imagery is a valuable source of landcover information which can be used to assist in the identification and mapping of terrain features. The common analysis procedure has been to perform classification directly on the Landsat digital values which are recorded on computer compatible tape. Recently, there has been some question of whether or not this is in fact a correct and precise use of the data because error is introduced as a result of system-related inconsistencies. In this research, the relationship between the original digital values recorded on tape and calculated physical values approximation of spectral albedo is studied. As a result of variations in the digital numbers caused by calibration differences between bands and between satellites, it is concluded that conversion to the more correct and more meaningful albedo values is an essential first step in multispectral classification of Landsat images, especially when

band ratios or multi-temporal images are employed in the classification.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Ruby Range, Southwest Yukon.

86-121 **MOULTON, J. and S.E. FRANKLIN** (1986). Use of Calibrated Landsat Data for Improving the Accuracy of Subarctic Terrain Classification. Paper, National Student Conference on Northern Studies, Ottawa, November 17-19, 1986.

**ABSTRACT / DESCRIPTION:**
In remote, less developed areas of the Earth such as the Canadian North, rugged and mountainous terrain can sometimes make traditional methods of terrain survey and classification based on aerial photography difficult. Landsat imagery offers a valuable alternative for land-cover and ecological classifications. These data can be used to monitor changes over time and as basic inventory and assessment inputs. However, spectral response patterns observed by Landsat sensors do not represent true physical values of surface reflectance as a result of variations in the data caused by sensor calibrations, the atmosphere, and the topography of the reflecting surface. In this paper an unsupervised classification of an area in the Ruby Range, Yukon is presented with class labels based on field observations and the conversion of original digital numbers to approximations of albedo. By calculation of reflectance for Landsats 2-5 on the none unsupervised terrain types, the importance of using a relatively simple calibration procedure is demonstrated for certain types of image analysis including multitemporal classification and comparing two images for different dates for change detection.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Ruby Range, Yukon.

86-122 **MURPHY, C.** (1986). Folklore Exchange between Labradorians and Newfoundland Fishing Families in Labrador. Paper, National Student Conference on Northern Studies, Ottawa, November 17-19, 1986.

**ABSTRACT / DESCRIPTION:**
This paper examines the genres of folkloric exchange and transmission between two populations of participants, Newfoundlanders and Labradorians, in the summer Labrador coastal fishery. Analyses of personal experience narratives and songs reveal the culturally symbiotic relations between Newfoundlanders and Labradorians. For the past 160 years, Newfoundlanders have had control of premises "on the Labrador"

formerly belonging to firms from England, Jersey and Québec. The Newfoundland fishermen fished either as stationers (land-based family units) or as floaters (schooner crews with one or two female cooks and salters). Their advent brought Labradorians in contact with a supply of potential spouses as well as a supply of potential employers and/or employees. The annual seasonal migration gave rise to many occasions for exchange of folklore and folklife between Labradorians and Newfoundlanders. These occasions included "harbour days", lulls in economic activity due to weather; Sundays, when no work was carried out due to religion; and the "waiting for the boat" period at the end of the season. During these periods, visiting of other family groups was the main vehicle for this cultural exchange. The folklore exchanged was then carried home to the winter communities in Newfoundland and Labrador.

**DISCIPLINE:** Sociology.

**FIELDWORK LOCATION:** Labrador.

86-123 **ROGERSON, R.J., D.J.A. EVANS and W.D. McCOY** (1986). "Five-year Growth of Rock Lichens in a Low-Arctic Mountain Environment, Northern Labrador". Geographie Physique et Quaternaire, XL(1): 85-91.

**ABSTRACT / DESCRIPTION:**
In 1978, three lichen growth stations were established for Rhizocarpon section Rhizocarpon species and one for Alectoria miniscula in the Cirque Mountain area of the Torngat mountains. Five years later, in 1983, the lichens were remeasured. The five-year growth represented by the change in the theoretical diameter is very variable, between 0.10 and 0.54 mm per year. These rates are larger than expected and exceed rates previously determined for an eastern Arctic area, the Northern Cumberland Peninsula of Baffin Island, by more than 3 to more than 20 times. Similar rates are known for 'great period' growth outside Arctic regions. If the growth rates represent long-term growth, the ages of recessional moraines in the Torngat Mountains should be recalculated. Moraines formerly described as Late Wisconsin to mid-Holocene may be of Neoglacial age. Variability of growth rates from one individual to another precludes using these data for constructing growth curves which may be used, even locally, in lichenometric dating.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Torngat Mountains, Northern Labrador.

86-124 **ROGERSON, R.J., H.W. JOSENHANS and T. BELL** (1986). "A 3.5 KHz Survey of Nachvak Fiord, Northern Labrador". Current Research: GSC Paper 86-1A, 221-228.

**ABSTRACT / DESCRIPTION:**
Nachvak Fiord contains four basins between Tasiuyak Arm and Nachvak Bay. The basins are up to 214 m deep and contain up to 55 m of stratified sediment overlying unstratified tills. The total sediment package can be divided into four units which probably represent a complete cycle of deglaciation from lodgement till through ice-contact, ice-proximal and ice-distal facies. Two moraine-like features are identified between the basins, and sediment thicknesses change greatly on either side of them, suggesting they were the sites of tillstands in recession, or stadial maxima. Thus, the sediment units in the basins are not likely synchronous in formation. Lodgement till was probably being formed in the westernmost basin while ice-proximal, or even ice-distal sediments were being emplaced in the outer basin.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Nachvak Fiord, Northern Labrador.

86-125 **ROGERSON, R.J., M.E. OLSON and D. BRANSON** (1986). "Medial Moraines and Surface Melt on Glaciers of the Torngat Mountains, Northern Labrador, Canada". Journal of Glaciology, 32(112): 350-354.

**ABSTRACT / DESCRIPTION:**
"Avalanche-type" medial moraines are described on four Torngat Mountains glaciers with single, rather than compound, firm basins. They form from debris avalanching down couloirs and are exposed by ice melt to form extensive debris covers on glacier snouts in the Torngat Mountains. The debris may play an important part in helping the glacier survive periods with warm summers and/or dry winters since in the Torngat Mountains average ice melt on debris-covered sites is approximately one-third of that on exposed ice.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Torngat Mountains, Labrador.

86-126 **SEARS, B.** (1986). An Investigation of Sedimentary Outliners on Quqaluit, Padloping and Durban Islands, Baffin Island. B.Sc. Thesis.

**ABSTRACT / DESCRIPTION:**
Investigation of sedimentary outliers located on Quqaluit, Padloping, and Durban Islands, on the east coast of Baffin Island, reveals that they were deposited in a fluvio-deltaic environment into a rifted valley. Indications are that the three outliers are related and developed in the same delta complex, in which Durban Island was a distinct lobe. Albian - Cenomanian age, has been proposed for pollen found in the strata. If these strata are related to rifting then an age of

initiation is earlier than previously proposed. The opposing models for the opening of Baffin Bay appear to be equally valid in the area and no strong conclusion can be drawn. Considering the problesm with timing and with regional faulting, questions still remain.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Ququaluit, Padloping, and Durban Islands,
Baffin Island, N.W.T.

86-127 **WILTON, D.H.C., C.S. MacDOUGALL, L.M. MacKENZIE and J.W. NORTH** (1986). Preliminary Report on Field Work Completed During 1986 in the Central Mineral Belt of Labrador. Report, Geological Survey of Canada, 59 p.

**ABSTRACT / DESCRIPTION:**
This report summarized the preliminary results from field work during the summer of 1986 in the Central Mineral Belt (CMB) of Labrador. The main objectives of this field work were to: (a) map and sample gossans within the Warren Creek Formation of the Moran Lake Group north of Croteau Lake, evaluate the significance of the unconformity between Archean basement rocks and the overlying Warren Creek Formation rocks, put the sulphide showings into their regional metallogenic context, and detail the structural history of the area; (b) examine and sample copper occurrences in the Bruce River Group; (c) sample the many members of the Sylvia Lake Formation of the Bruce River Group for geochemical analyses, in order to define a chemical stratigraphy within the unit and to define background geochemical values with which to compare the altered units that host vein-type mineralization; (d) examine, sample, compare and contrast uranium occurrences in the granitic Archean basement, the Moran Lake Group and the Bruce River Group; (e) complete transects through the Michelin Deposit and surrounding area in order to evaluate the relative significance of shear zones to the U mineralizing event; and (f) examine and sample those showings in the Upper Aillik Group which had not been evaluated during the 1985 field program.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Labrador.

86-128 **FOGGIN, P.** (1986). État de santé et facteurs de risque des Inuit du Nord québécois: Une approche méthodologique régionale. Symposium: Santé et Urbanisation, Dakar, Sénégal, décembre 1986.

**RÉSUMÉ / DESCRIPTION:**
Le but de cette présentation est de faire la synthèse d'une démarche de recherche entreprise entre 1982 et 1986 sur l'état de santé et les facteurs de risque de la population Inuit du nord du Québec. Ce projet est aussi connu sous le libellé de PLASANNOUQ, un sigle représentant les mots "Planification/Santé/Nouveau-Québec", série de concepts couvrant les finalités envisagées par cette initiative scientifique, savoir bien et mieux comprendre les relations entre les diverses variables sanitaires, envrionnementales et comportementales de cette population autochtone dans le but de promouvoir l'élaboration des programmes de soins préventifs plus efficaces.
Cette étude s'est développée donc en quatre étapes:
a) Voyages préparatoires dans chacune des treize communautés afin de rencontrer les personnes et groupes concernés - comités de santé locaux, conseils municipaux, cliniques médicales et centres hospitaliers;
b) L'enquête en tant que telle (questionnaire socio-médical, questionnaires épidémiologiques pour adultes et pour enfants, questionnaire sur la consommation de la drogue, protocole médical et tests spirométriques et bio-chimiques);
c) Le traitement des données - compilation, indices, analyses;
d) L'envoi des résultats dans chacune des communautés participantes afin que Inuit et chercheurs puissent s'interroger sur leur sens.

**DISCIPLINE:** Géographie humaine.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Nouveau-Québec.

86-129 **LAUZON, H. et P. FOGGIN** (1986). Health Status and Risk Factors: The Cree of Northern Québec. Report.

**ABSTRACT / DESCRIPTION:**
The Cree Survey found that the levels of tobacco consumption are very high by comparison with national averages. Much educational work needs to be done to reduce the massive trend toward smoking that is seen among young Cree adults. The same could be said with regard to an excessive use of soft drinks, this being a particular hazard with regard to dental health. Another area of concern is that of being overweight (as related to age and height). The scientific literature is very clear as to the relationship between obesity and cardiovascular and diabetic problems. Work needs to be done at the level of

nutritional habits as well as in assuring the availability of more suitable food items in local stores.
With regard to high blood pressure, as a risk factor, the Cree population seems less inclined to follow treatment for this condition than is the case for the Canadian population as a whole. In any case, both populations (Cree and overall Canadian) need to be far more greatly sensitized as to the danger and the treatment of high blood pressure, sometimes referred to as "the silent killer". Little can be said in a definitive way about alcohol and drug consumption until we have had more time to analyse the relationships between this factor and other variables. It would seem, however, that high accident levels as well as mental health problems would be related to this particular risk factor. The life-style variable having to do with drinking water is also a risk-factor about which something can be done. If taps, for example, are hooked up to water supplies that people will drink, then water purity can be guaranteed. This would go a long way to eliminating water-transmissible diseases such as gastro-enteritis.

**DISCIPLINE:** Health/Medicine.

**FIELDWORK LOCATION:** Nouveau-Québec.

86-130 **LESSARD, M.** (1986). "Chisasibi: le point de vue des résidants sur la qualité de leur environnement". Plan Canada, 26(5): 124-134.

**RÉSUMÉ / DESCRIPTION:**
Cette recherche évaluative sur Chisasibi, nouveau village de la communauté de Fort George (baie James, Québec), veut rendre compte des multiples facteurs qui interviennent dans la perception de la qualité de l'environnement, dont la satisfaction des résidants n'est qu'un indicateur parmi d'autres. Les aspects positifs et négatifs identifiés sont reliés au village dans son ensemble, aux équipements collectifs, au groupe de maisons, à la maison et aux infrastructures des services publics. Les apports de l'étude se situent à deux niveaux: l'évaluation de la qualité de l'environnemnet et l'aménagement de milieux culturels semblables ou de milieux nordiques.

**DISCIPLINE:** Géographie humaine.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Chisasibi, Nouveau-Québec.

86-131 **LESSARD, M., N. CHICOINE et R. OUELLET** (1986). "Le nouveau village de Chisasibi: une évaluation par les résidants". Recherches amérindiennes au Québec, XVI (2-3): 127-139.

**RÉSUMÉ / DESCRIPTION:**
En 1980, la bande crie de Fort George aménageait dans un

nouveau village appelé Chisasibi. Ce relogement a ceci de particulier qu'il s'agit de celui de toute une communauté et aussi que cette communauté y a participé activement, en intéraction avec l'équipe de consultants composée d'urbanistes, d'architectes et d'ingénieurs. Après les quelques années d'existence de Chisasibi, il nous apparaît opportun de nous interroger sur la qualité de l'environnement dans le nouveau village, conçu pour être mieux adapté aux habitudes de vie et aux attentes de la communauté. Le présent article, qui rend compte de la première partie d'une recherche amorcée en 1983, vise à évaluer la qualité de l'environnement à Chisasibi du point de vue des résidants et à identifier les effets de leur participation à la planification du relogement. La seconde partie de la recherche, qui est présentement en cours, porte sur l'élaboration de solutions aux problèmes techniques et aux problèmes de gestion identifiés. Nous avons choisi Chisasibi comme cadre de notre recherche parce que ce village représentait qualité de l'environnement perçue et pour l'évaluation de la planification partagée. Malgré l'éloignement (1000 km de Montréal) et les différences culturelles, le relogement à Chisasibi s'est révélé remarquablement intéressant à l'égard de ces deux objectifs. La contribution de notre recherche se situe à trois niveaux: la perception de la qualité de l'environnement, les effets de la planification partagée sur cette perception et l'aménagement de milieux humains.

**DISCIPLINE:** Géographie humaine.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Chisasibi, Québec.

86-132 **KEAYS, G.M. and R.W. WEIN** (1986). Fire Severity and Forest Composition in Wood Buffalo National Park. Research Report.

**ABSTRACT / DESCRIPTION:**
In Wood Buffalo National Park, moisture gradients lead to jack pine stands on sand dune formations and black spruce on interdune organic soils. It is well known that at the scale of the seedling microenvironment, fire-caused changes in soil physical and chemical conditions can affect seed germination (Henderson and Golding, 1983; Sims, 1976). Observations indicated that deep layers of ash after fire in the organic soils adjacent to the sand dunes prevented conifer tree germination for the first three years after fire. It was hypothesized that severe fires in the area result in the movement of vegetation ecotones, creating expanded jack pine habitat and contracted black spruce.
From data collected in 1983 and 1984, it was shown that jack pine habitats expanded as a result of a shifted ecotone. Analysis of species association showed poor correlations between species, suggesting that competition plays a minor role in seedling survivorship. The contagious dispersion of seedlings appeared to be most dependent upon soil conditions, particularly in the former black spruce habitat, where duff remained after the fire.

**DISCIPLINE:** Forestry.

**FIELDWORK LOCATION:** Wood Buffalo National Park, N.W.T.

86-133 **LUTES, M.** (1986). Attitudes and Policies Regarding Forest Fires and Forest Fire Management. Research Report.

**ABSTRACT / DESCRIPTION:**
The objective of the study was to document the attitudes of individuals and organizations in a small, relatively isolated community towards forest fires and fire management. The interviews revealed conflicting views of the desired role of fires and fire management in the local social, economic and physical environment. Much of this conflict is along ethnic and occupational lines; especially vociferous are the trappers and other native peoples who have close ties to the land. Many of these people see fire as destructive to wildlife and its habitat and thus as a threat to their way of life. They express a strong desire for a more comprehensive fire control program and also for more local control over it. Other residents see fires as generally a benefit to nature or even as an ecological necessity, and the money spent on fire control as either a waste or counterproductive. This study will describe the attitudes of the various groups, and compare these

attitudes with Kates' stages of technosocial development. A fruitful avenue for further research would be to focus on the political aspects of fire management policy, including the formulation of policy, channels of public participation, and the degree of consultation in the implementation of these policies. From the work already done, it would seem that the degree to which citizens feel that they are involved in the policy process, and that their wishes are being taken into account, is of primary importance in shaping their attitudes towards forest fires and fire management policy. This could be even more important than the impact of the actual forest fires on their economic and cultural well-being. Another avenue of investigation could be the use and effectiveness of public education in clearing up the misconceptions that exist regarding fire management and the role of fire in the environment.

**DISCIPLINE:** Forestry.

**FIELDWORK LOCATION:** Fort Smith, N.W.T.

86-134 **MORIN, R.L., R.W. WEIN and E.E. DERENYI** (1986). Satellite Imagery to Differentiate Vegetation and Fuel Types. Research Report.

**ABSTRACT / DESCRIPTION:**
Previous work (Morin et al. 1986) indicated that Landsat MSS data can discriminate between major forest cover types occurring within a study area in the northern part of Wood Buffalo National Park. Other scientists have shown that accuracy levels and discrimination between cover types is significantly improved when digital classifications are carried out on enhanced data. In our work, the enhancement used was a principal component transformation. It was also found that Landsat MSS data met, or surpassed, the spatial resolutions of currently available inventories derived by more traditional methods such as air photo analysis. In light of these results, analysis of Landsat data was tested on the typical vegetation mixes found in other areas of the Park, such as the Peace-Athabasca Delta. In addition to establishing an inventory, multitemporal analysis was used to determine the extent to which vegetative changes, particularly willow invasion of meadow areas, was detectable on satellite imagery. The results of these studies should provide significant insights concerning the separability of the vegetation structure occurring within the Delta. Examination of multitemporal analysis techniques will assist in assessing the relative utility of the approaches tested for future up-dating of the WOODBUFF data base. Multitemporal analysis techniques are also of interest because current investigations are centred around the Band 5 overlay techniques proposed by Banner and Lynham (1981).

**DISCIPLINE:** Forestry.

**FIELDWORK LOCATION:** Wood Buffalo National Park, N.W.T.

86-135 **WEIN, R.W. and W.R. CARPENTER** (1986). Understory Vegetation (and Forage)-Stand Characteristic Relationships in Jack Pine Stands. Report.

**ABSTRACT / DESCRIPTION:**
Studies on understory vegetation are necessary to predict stand fuel loadings and the value of stands for wildlife habitat. In addition, once relationships between stand characteristics and ground vegetation are made, understory vegetation can be predicted from aerial photography and satellite imagery. The understory vegetation data obtained by the study computer data bank form and preliminary ordination procedures have grouped the stands on the basis of similarity. Further work is required to describe the vegetation changes over approximately a 100-year period and to interpret this information in terms of fuel and wildlife habitat. To better understand why the understory vegetation variability occurs, correlation procedures must be undertaken to link stand and site characteristics to the key understory vegetation components. At present, it appears that time since last fire is more closely associated with understory vegetation than the stand or site characteristics. The quantity of bison forage under the jack pine stands did not range as widely as expected but in general there was a positive relationship between forage quantity and the shorter the period since the last fire. As expected there were larger quantities of forage produced on the more mesic and nutrient rich soils whether those soils were dominated by jack pine or species such as *Picea glauca*, *Picea mariana*, or *Popilus tremuloides*. Nutrient analyses of the vegetation continues.

**DISCIPLINE:** Forestry.

**FIELDWORK LOCATION:** Wood Buffalo National Park, N.W.T.

86-136 **BEAUDET, H.** (1986). Étude palynologique et géomorphologique dans le bassin du ruisseau Mackintosh, Territoire du Yukon. Thèse de maîtrise, Département de géographie, 76 p.

**RÉSUMÉ / DESCRIPTION:**
Une étude palynologique et géomorphologique a été menée dans le bassin du ruisseau Mackintosh, dans le secteur nord du lac Aishihik, Sud-Ouest du Yukon. La recherche a pour but de préciser la période de la déglaciation du bassin Mackintosh en amont de deux cordons morainiques préalablement non-correlés et de reconstituer l'évolution du paysage végétal durant l'Holocène. L'analyse géomorphologique, par la cartographie des unités morphologiques et la datation du début de la sédimentation organique post-glaciaire révèle une déglaciation récente du bassin reliée à la glaciation McConnell. Afin de reconstituer l'évolution du paysage végétal, le contenu pollinique d'un profil de sédiments lacustres gelés et émergés a été analysé. Le diagramme pollinique Mackintosh Creek-HB1 présente trois zones interprétées successivement comme la toundra herbacée suivie, vers 9900 ans BP, de la toundra arbustive dominée par le bouleau; de l'arrivée de l'épinette vers 8900 ans BP et de l'instauration de la toundra forestière moderne vers 8000 ans BP. Le diagramme affiche des variations mineures associées à l'évolution du bassin lacustre depuis cette dernière époque. Les résultats de l'étude indiquent une implantation synchrone avec d'autres sites d'études au Sud-Ouest du Yukon et du secteur du Mackenzie. Cette coïncidence soutient indirectement l'idée de refuges locaux de l'épinette en Alaska et/ou du Sud-Ouest du Yukon non englacé.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Ruisseau Mackintosh, Yukon.

86-137 **BEAUDRY, L.** (1986). Morphologie et sédimentologie des moraines de De Geer de la région de la rivière La Grande, Québec. Communication, Conférence nationale des étudiants en études nordiques, Ottawa, 17-19 novembre 1986.

**RÉSUMÉ / DESCRIPTION:**
Le but de cette étude est de présenter les résultats préliminaires d'une analyse morphologique et sédimentologique de 17 moraines de De Geer situées à l'est de la Baie de James, dans la région de Radisson. Les moraines sont surtout constituées de sable moyen, n'offrant pas de structures apparentes. De plus, la Fraction inférieure à 0,063 mm présente un mode. Les moraines de De Geer forment des populations pouvant parfois compter une centaine de crêtes

successives qui s'étendent sur plusieurs kilomètres. Leur distribution spatiale est limitée à l'ouest par la moraine de Sakami et à l'est, par la limite marine maximale. On les retrouve enfin dans les zones basses au relief peu accentué. Au point de vue morphologie, les moraines sont parallèles entres elles, d'une hauteur variant entre 1 m et 10 m et espacées de 150 m à 200 m. Elles atteignent en moyenne 250 m de longueur et ont une largeur d'environ 30 m. Les moraines étudiées reposent vraisemblablement sur du till et sont recouvertes partiellement par les argiles de la mer de Tyrrell, ce qui pose certains problèmes dans l'analyse de leur morphologie.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Rivière La Grande, Québec.

86-138 **CAMPBELL, I.** (1986). Pollen-Sediment Relationships in the Ruby Range, Yukon Territory. Poster and Manuscript, National Student Conference on Northern Studies, Ottawa, November 17-19, 1986.

**ABSTRACT / DESCRIPTION:**
Thick deposits of peat and gyttja, considered to be the best sediments for pollen analysis, are completely absent at moderately high altitudes in the Ruby Range. Analysis of a sedimentologically variable deposit including layers of peat, silt, sand, and volcanic ash shows the expected distortion of the pollen spectra by the changing sedimentary environment. Subaqueous silts are dominated by regional pollen types, while sands deposited by rillwash show a higher proportion of local pollen coupled with very low pollen/sediment ratios, due to their high sedimentation rate. Comparison of this section with a control section in a uniform silt deposit demonstrates that in spite of these distortions, deposits of this type can still be used for paleoclimatic interpretations. Both profiles show a period starting prior to ca. 3840 BP and lasting until ca. 2450 BP, during which the regional climate was both warmer and drier than it is today. This is followed by essentially modern conditions between ca. 1655 BP and ca. 1380 BP, and finally the development of the modern regional climate.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Ruby Range, Yukon.

86-139 **CULLEN, R.** (1986). The Mapping of the Fenton Elbow, Fenton Lake, N.W.T. Second Report, Geology Division of Indian and Northern Affairs Canada, Yellowknife, N.W.T., February, 1986.

**ABSTRACT / DESCRIPTION:**
Mapping of the Fenton Lake portion of the Cameron River Belt

was begun in the summer of 1985. A two man crew from the University of Ottawa, began the mapping on a 1:10,000 scale. Field work was carried out from early July to late August from a base camp on a small island in Fenton Lake. The granitic rocks to the east are weakly foliated with some development of a quartz feldspar segregation layering. Intrusions of unfoliated dikes of granitic composition into this pluton indicate that several phases of plutonic activity may have occured to produce the large volume of granites visible on regional scale maps.(Padgham, 1985) Foliation in the granitic rocks, where developed, appears continuous with a foliation in the volcanic rocks indicating the two lithologies were in place pre-deformation.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Fenton Lake, N.W.T.

**86-140** **CULLEN, R.** (1986). Structural Geology and Metamorphism in the Fenton 'Elbow', Cameron River Belt, N.W.T. Report, Northern Research Group Mini Symposium, University of Ottawa, November 1986.

**ABSTRACT / DESCRIPTION:**
The field work carried out was to determine the nature of the change in trend of the volcanic rocks on the eastern shore of Fenton Lake, herein referred to as the Fenton 'Elbow'. The Elbow marks the change from a northeasterly to a northwesterly trend in the volcanic rocks. The volcanic rocks along the eastern shore of Fenton Lake overlie a granitic terrain to the east and are, steeply dipping to overturned towards the west. The granitic rocks are, in part, basement to the Yellowknife supracrustals (Sleepy Dragon Complex) and younger than the volcanics, and partly, intrusive into both the volcanics and the Sleepy Dragon Complex (Morose Granite). The contact between the Sleepy Dragon Complex and the overlying volcanics is marked by alteration in the volcanic rocks and the presence of pyrite and pyrrhotite.
Approximately midway across the volcanic pile a unit of quartz-eye porphyry, interpreted to be felsic tuff, outcrops in the low-lying areas and along the lake shores. The volcanics are overlain by the meta-turbidites of the Yellowknife Basin to the west. The poorly exposed contact between the volcanics and the meta-turbidites is marked by alteration in both rock types. The whole package has been deformed and metamorphosed through the upper greenschist facies to the low pressure amphibolite facies (cordierite grade).

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Fenton Lake, N.W.T.

86-141 **DEWEZ, V.** (1986). Pétrographie de sédiments, un outil de reconstruction d'écoulement glaciaire au Sud-Ouest du Yukon. Communication, Conférence nationale des étudiants en études nordiques, Ottawa, 17-19 novembre 1986.

**RÉSUMÉ / DESCRIPTION:**
L'origine et l'extension des langues de glace wisconsiniennes font partie de l'étude paléogéographique entreprise dans la région située entre les lacs Kluane et Aishihik, au Sud-Ouest du Yukon. Les dépôts les plus puissants ainsi que les sites-clés ont été échantillonnés, notamment pour l'analyse en lames minces des matériaux de 0,5 à 2 cm. La pétrographie d'une centaine d'échantillons permet de déterminer, en comparaison avec les cartes géologiques, si les dépôts correspondent à une glace d'origine locale/régionale ou au contraire extra-régionale. En effet, les échantillons prélevés le long du lac Kluane, ainsi que ceux récoltés dans les vallées de Sekulmun et Aishihik comportent des débris extra-régionaux, provenant de la chaîne des Ruby, entre les lacs Kluane et Sekulmun, ne comportent que des débris locaux ou strictement régionaux, granodiorites et schistes. Ceci confirme l'interprétation de deux grandes langues de glace ayant envahi les vallées occupées actuellement par les lacs Kluane, Sekulmun et Aishihik à partir de St. Elias, mais prouve surtout qu'elles ne se sont pas réjointes au coeur de la Chaîne Ruby. Leur extension latérale dans les vallées de cette chaîne est délimitée par la présence ou non de débris extra-régionaux dans les dépôts glaciaires échantillonnés. A l'intérieur même de la chaîne et dans le bassin d'Aishihik, des différences pétrographiques entre échantillons indiquent les provenances de certaines langues.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Lac Kluane et Aishihik, Sud-ouest Yukon.

86-142 **DEWEZ, V., D. LAGAREC et M. PHIPPS** (1986). "L'analyse systémique de la distribution de formes périglaciaires en relation avec le climat dans le Nord du Québec". Annales de l'ACFAS, 54: 212.

**RÉSUMÉ / DESCRIPTION:**
L'étude systémique de la distribution dans le Nord du Québec de formes périglaciaires (palses, buttes cryogènes minérales) ou associées (tourbières réticulées) montre que celle-ci peut s'expliquer à 80% par des facteurs climatiques. On a utilisé une procédure divisive itérative (PEGASE) qui a sélectionné 10 caractéristiques permettant la meilleure discrimination spatiale des différentes formes, et qui en 7 paliers organise la région en 24 sous-ensembles. Globalement, 5 variables contribuent pour 80% à la réguentropie, soit: la t° annuelle min. (24%), la t° moy. de juin (16%), les précipitations de juin (15.5%), les degrés-jours de croissance (14.5%) et

l'amplitude thermique annuelle (10%). Au total les variables thermiques interviennent pour 70% et les variables hydriques pour 30%. Le rôle des variables thermiques diminue selon un gradient NW-SE, passant de 95% à 43%. La zone des buttes cryogènes minérales connait les conditions les plus froides; les palses sont définies par des étés frais alors que les tourbières réticulées correspondent à un climat plus continental avec des chutes de neige abondantes. Entre ces dernières, la zone occupée par des mares de palses a des étés plus chauds que celle des palses, et des hivers plus secs que celle des tourbières réticulées.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Québec nordique.

86-143 **GRAF, G.C. and O.A. DIXON** (1986). Carbonate Mudmounds in a Upper Silurian Ramp/Shelf Transition at Gascoyne Inlet, Devon Island, Arctic Canada. Paper, Geology Association of Canada/Canadian Geophysical Union, Joint Annual Meeting, Ottawa, May 1986.

**ABSTRACT / DESCRIPTION:**
A 40 m thick sequence consisting of mudmound complexes and intermound sediments occurs in the Douro/Barlow Inlet transition sequence on southwestern Devon Island. Cliff exposures indicated that the mudmounds are randomly scattered, are moundlike in geometry and have no preferential orientation. They are up to 40 m thick and comprise a sparsely fossiliferous micrite core, crinoidal flankbeds and an irregular stromatoporoid bindstone cap. In intermound areas a basal rubbly limestone (mudstone and wackestone) is abruptly overlain by the mudmound crinoidal flankbeds. These are in turn overlain by well-bedded mudstones. Paleoecologic and sedimentologic studies indicated that the mudmounds initially developed on storm-transported sediments in subtidal, low energy conditions above storm wave base. With upward growth of the mounds into shallower, more agitated conditions, extensive crinoidal flankbeds developed. At this time, the mudmounds had a relief of about 4 m and intermound sediments were predominantly debris shed off the mounds. A subsequent relative deepening produced more open marine conditions and resulted in growth of stromatoporoids on the mound tops. The improved circulation may have increased transport of fine sediments to intermound areas and these sediments eventually onlapped and terminated the mounds.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Gascoyne Inlet, Devon Island, N.W.T.

86-144 **KASPER, J.N. and P.G. JOHNSON** (1986). Drainage Characteristics of an Ice-Dammed Lake, Kaskawulsh Glacier

Basin, St. Elias Range, Southwest Yukon Territory. Paper, National Student Conference on Northern Studies, Ottawa, November 17-19, 1986.

**ABSTRACT / DESCRIPTION:**
The Kaskawulsh Glacier, located in the St. Elias Range, Yukon Territory, dams a small lake against its northern margin in a tributary drainage basin and close to the accumulation zone. The lake has a history of annual drainage events producing a series of yearly depositional sequences. The lake is fed by meltwater originating from the Kaskawulsh Glacier and from three small valley glaciers located within the basin. The mean temperature for the influent meltwater is less than 1°C from the Kaskawulsh, and ranges between 2.7°C and 4.0°C for the three tributary streams. The variations in influent water temperature produce temperature profiles which increase with depth. Water current speeds indicated sediment movement into the lake at the bed and at locations through the water column. The different sediment levels were produced by turbidity currents resulting from the temperature and suspended sediment contrasts. High sediment loads in the input streams from the basin coupled with the progressive rise in lake level throughout the season lead to the formation of retrogressive annual deltaic sequences. Despite this transgressive action, the maximum lake levels have been regressing throughout the post-Neoglacial period.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** St. Elias Range, Yukon.

86-145 **KERR, D.** (1986). Late Quaternary Stratigraphy and Depositional Environments in the Basin of the Richardson and Rae Rivers, N.W.T. M.Sc. Thesis, Department of Geology.

**ABSTRACT / DESCRIPTION:**
A detailed investigation of the stratigraphic sections in the basin of the Richardson and Rae Rivers has led to a better understanding of the Late Quaternary history of deglaciation in this part of the Northwest Territories. Regional lithostratigraphic correlation confirmed the existence of a major glacial lake which evolved through different phases prior to its transition to a postglacial sea following the easterly retreat of a lobe of the Laurentide Ice Sheet from the study area. The glaciolacustrine to marine transition is characterized by an upward-fining trend representing the proglacial lacustrine environment where sedimentation was controlled by a receding ice front, succeeded by an upward-coarsening trend corresponding to the regressive marine sequence resulting from isostatic uplift. No intermediate terrestrial phase or marine transgression is recorded, as the marine incursion was instantaneous since sea level and the last proglacial lake level were approximately at the same elevation.

The complete sedimentary succession is composed of: a) basal and/or flow till, b) stratified subaqueous sand and gravel, c) glaciolacustrine silty clay rhythmites, d) massive marine silty clay, and e) littoral marine sand. The sudden passage from lacustrine to marine environments is reflected in the abrupt change in depositional mechanisms. Turbidity currents prevailed in the proglacial lake as inferred from thick sequences of varve-like couplets, whereas the salinity of marine waters, impeding the sedimentation of fines by heavy-density bottom flows, led to the deposition of structureless marine silty clays by flocculation.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Richardson and Rae Rivers, N.W.T.

86-146 **LACASSE, D. et P.G. JOHNSON** (1986). Glaciation locale pendant le Pléistocène Supérieur et l'Holocène au Sud-Ouest du Yukon. Thèse de maîtrise, Département de géographie.

**RÉSUMÉ / DESCRIPTION:**
Depuis la fin de la dernière glaciation du Pléistocène les fronts des glaciers du Sud-Ouest du Yukon ont fluctué à diverses périodes. Une chronologie relative des fluctuations glaciaires peut être établie par la datation des dépôts moraniques laissés par les glaciers de cirque de la chaîne Ruby. Compte tenu de la position géographique et des caractéristiques climatiques actuelles, la présence de glaciers de cirque au sein de cete chaîne et leurs fluctuations durant l'Holocène nécessitent des conditions paléoclimatiques différentes de celles d'aujourd'hui. Selon des divers résultats obtenus, on peut déceler au moins trois réavancées glaciaires qui datent d'avant 1200 and BP. Ces réavancées n'ont pas été nécessairement synchronisées d'un cirque à l'autre. Le problème reste à déterminer si ces glaciers datent de la fin du Pléistocène ou de l'Holocène. Les moraines de trois cirques d'orientation et d'altitude semlables ont été échantillonnées. De façon relative, une chronologie des multifluctuations glaciaires de la chaîne Ruby a été établie en déterminant l'âge des moraines. Le degré de développement de la végétation, du sol et du lichen Rhizocarpon geographicum sl ainsi que la téphrochronologie nous ont permis d'établir cette chronologie partielle. Par contre on trouve d'énormes plaques de neige semi-permanentes nichées entre la moraine et le versant à l'intérieur de l'un des cirques. Sur cette moraine, certaines caractéristiques des facteurs étudiés et mentionnés ci-dessus sont moins développées qu'ailleurs. Ceci porte à croire que cette moraine aurait été édifiée au début de l'Holocène.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Chaîne Ruby, Sud-Ouest du Yukon.

86-147 **MUIR, I.D., P. WONG and J. WENDTE** (1986). Devonian Hare Indian-Ramparts Evolution, Mackenzie Mountains and Subsurface Norman Wells, N.W.T.: Basinfill and Platform-Reef Development. Canadian Society of Petroleum Geologists Convention, Calgary, June 1986.

**ABSTRACT / DESCRIPTION:**
Civetian-Frasnian strata in the Norman Wells area were deposited as an assemblage of shallowing upward sequences in response to varying rates of sea level rise. First-order cycles (greater than 200m thick) consist of a number of second-order cycles (10-25m thick). These smaller cycles are best defined in shallow water platform and reef complex facies where they can be traced regionally. However they are also recognized in the Hare Indian clinothem. Major changes in sea level for any given second-order cycle are made up of minor increments resulting in third-order cycles (2-5m thick) that are most accurately recorded by reef interior lagoon sedimentation. The hierarchy of this cyclic arrangement of strata is well-defined in both the surface Mackenzie Mountains and the subsurface Norman Wells reef complexes, thus enabling the correlation of time-equivalent growth stages between both complexes over a distance of 100km. This, and the small-scale periodicity of the second-, and third-order cycles argue for eustatic sea-level control. The following eight major growth stages are recognized in both complexes: (1) drowning of the Hume platform, (2) progradation of the Hare Indian clastic wedge, (3) drowning and deposition of dark, carbonaceous limestones and shales of the "Carcajou Marker", (4) carbonate platform inception, initial growth, and subsequent aggradation, (5) reef inception, progradation and subsequent aggradation, (6) reef backstepping and aggradation, (7) drowning of the Norman Wells reef complex and backstepping of the Mackenzie Mountain reef complex, and (8) drowning of the Mackenzie Mountain reef complex.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Norman Wells, N.W.T.

86-148 **OKULITCH, A.V., J.J. PACKARD and A.T. ZOLNAI** (1986). "Evolution of the Boothia Uplift, Arctic Canada". Canadian Journal of Earth Sciences, 23: 350-358.

**ABSTRACT / DESCRIPTION:**
The Boothia Uplift extends 1000 km northward from the northern Canadian Shield into the Arctic Archipelago. Consisting of a core of Archean to Aphebian gneissic units and a cover of Proterozoic to Devonian strata of the Arctic Platform and Franklinian Miogeocline, it formed during several minor pluses of uplift in the late Proterozoic and early Paleozoic and a major episode of tectonism during the Siluro-Devonian. Although it has long been regarded as a "horst" or vertical block uplift, compilation of new and previous data suggests

that the uplift can be interpreted as a major, west-directed, intricate mass of crystalline basement mantled by faulted and drape-folded cover. Details of the vertical componenet of movement have been provided by sedimentological and stratigraphic studies. Uplift increases northward from the craton to a maximum of 5 km. Estimates of horizontal movement, predicated on assumed fault dips, could be as much as 30 km.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Boothia Uplift, N.W.T.

86-149 **PACKARD, J.J.** (1986). Substrate Cementation in Association with Crinoid Holdfasts. Paper, Geological Association of Canada/Mining Association of Canada/Canadian Geophysical Union, Joint Annual Meeting, Ottawa, May 1986.

**ABSTRACT / DESCRIPTION:**
In the medial foreslope facies of the Upper Silurian Barlow Inlet Formation on Cornwallis Island, Arctic Canada, there occurs abundant, in situ, crinoid rhizoidal holdfasts. Nests of crinoids evidently colonized both autochthonous deposits of hemipelagic lime mud and the upper surfaces of debris flows. Intimately and exclusively associated with the holdfast networks, are tubules that in cross-section exhibit distinct, concentric bands of light and dark colored micrite and mircrospar, surrounding a centre of calcite spar centres range in size from 300 to 600 microns. Statistically, these size parameters are indistinguishable as a separate population from diameters of cirri and their respective lumens. The spatial and geometric affinities of the tubules and cirri suggest some mutual (genetic) relationship.
A hypothesis is advanced that explains the tubules as biocatalytic cementation phenomena, produced during the progressive centripetal resorption of the mesodermal skeleton of select holdfast cirri. The skeletal absorption and cementation process may have been a stabilization strategy, or possibly a response to periodic anoxia of basin waters.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Cornwallis Island, N.W.T.

86-150 **PARENT**, S. (1986). Contribution à l'étude du paysage végétal d'une pessière, Baie Cultus, Lac Kluane (Yukon): modéle de distribution spatiale des phytocénoses en fonction des facteurs abiotiques. Rapport de recherche.

**RÉSUMÉ / DESCRIPTION:**
La présent rapport a pour but, d'une part, de présenter les objectifs de la recherche entreprise au cours de deux dernières années et, d'autre part, de fournir des renseignements pertinents sur la nature des travaux effectués sur le terrain

durant l'été 1986. En effet, au cours du séjour sur le terrain l'été dernier, soit du 24 juin au 1$^{er}$ août, des travaux ont été poursuivis dans le cadre d'une thèse de maîtrise qui a pour objectif de circonscrire les facteurs abiotiques qui régissent la distribution spatiale des communautés végétales, de définir leur importance relative dans le milieu ainsi que de vérifier la récurrence spatiale des relations milieu-communautés végétales.
Le travail sur le terrain, d'une durée de 37 jours, a comporté deux volets. En premier lieu, des données phytosociologiques ont été recueillies à l'intérieur d'une zone d'étude contiguë à celle échantillonnée l'année précédente. Parmi ces données phytosociologiques, on retrouve des variables telles que le type de phytocénose, la pente, l'orientation, le méso-relief, le micro-relief, la cendre volcanique, le pergélisol, etc. En second lieu, des échantillons de sol ont été pris en se fondant sur la classification morphologique établie au cours de l'année. Cette classification comprend 13 types de sol. Par surcroît, d'autres données pédologiques ont été recueillies, soit la texture, la structure, la couleur, l'épaisseur des horizons, la pierrosité, le drainage, etc.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Lac Kluane, Yukon.

86-151 **THIBAUDEAU, P.** (1986), Le microclimat des cavernes Tsi Tshé Han et Bear Cave, Nord du Yukon. Thèse de maîtrise.

**RÉSUMÉ / DESCRIPTION:**
Au cours de l'été 1985, les cavernes Tsi-tché-han et Bear Cave, situées à la latitude du cercle polaire arctique, ont été étudiées au point de vue climatique. Les températures et l'humidité relative de l'air furent enregistrées et les circulations de l'air ont été détectées. Les résultats ont permis de construire un modèle du comportement climatique des cavernes du Yukon septentrional durant la période estivale caractérisé par trois zones microclimatiques à l'intérieur des grottes. La première zone comprend un segment au 35 m depuis l'entrée, et est marquée par des températures positives, un influx de courants d'air chauds en provenance de l'extérieur et un taux d'humidité relative élevé. La deuxième zone est caractérisée par une température de l'air de 0°C et une humidité relative de 100%, qui résulte en la formation de glace et de cristaux de givre. Au-delà, dans la troisième zone, la température ambiante est de -2°C et l'air est sec et beaucoup plus stagnant, les seules circulations s'effectuant vers la sortie.
L'étude permet de confirmer la présence d'un pergélisol continu. Les concrétionnements importants impliquent des climats plus chauds dans le passé, possiblement au cours de différentes époques. Finalement, une tendance actuelle vers un réchauffement climatique régional pourrait provoquer le retrait

du pergélisol et remettre en marche l'activité du concrétionnement.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Tsi Tshé Han et Bear Cave,
Nord du Yukon.

**86-152** **WANG, X.** (1986). Vegetational History During the Last 1230 Years in the Bear Lakes Area, Yukon. Poster and Manuscript, National Students Conference on Northern Studies, Ottawa, November 17-19, 1986.

**ABSTRACT / DESCRIPTION:**
A pollen diagram of a 26 cm well preserved peat profile from the Bear Lakes area reveals the history of vegetational variation during the last 1230 years. The profile was collected from a small depression between two lobes of moraine, and sampled at 1 cm intervals. At the bottom of the profile the occurrence of a key bed, a conspicuous layer of White River Volcanic Ash dated at 1230 Y.B.P., makes it possible to correlate this profile with other studies and facilitate the interpretation of pollen diagrams with its absolute date. Four local pollen zones can be recognized. Zone 1 represents a forest-shrub-tundra vegetation which occupied the area from at least 1230 Y.B.P. up to approximately 950 Y.B.P. Zone 2 reveals evidence of a forest fire around 950 Y.B.P. and a history of reforestation in the area. Zone 3 represents an open spruce forest environment in the area which lasted about 300 years, i.e. from 750 Y.B.P. to 400 Y.B.P. Zone 4 reveals the establishment of close phase spruce forests since about 400 Y.B.P.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Bear Lake, Yukon.

86-153 **TREMBLAY, C.** (1986). Étude de la repartition des platinoïdes dans les différentes intrusions mafiques de la region du lac Vaillant (Cape Smith). Rapport de recherche.

**RÉSUMÉ / DESCRIPTION:**
Dans la région du lac Vaillant, on trouve essentiellement deux types d'intrusion mafique et ultramafique porteurs de minéralisation: ainsi le premier recoupe les volcaniques, il est petit (100 m) peu différencié et contient des sulfures de nickel et de cuivre que l'on retrouve à la base. Le second type d'intrusion est beaucoup plus gros (800 m); il est concordant et très bien différencié. Il contient de faibles minéralisations en pyrrhotine et chalcopyrite associées aux roches différenciées (ferro-gabbro, ferro-pyroxénite, pegmatitique) du sommet de l'intrusion. L'étude portera sur les contrôles qui ont affecté la répartition des platinoïdes dans chacun de ces systèmes magmatiques afin de voir lequel est le plus susceptible de concentrer ces éléments.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Lac Vaillant, Nouveau-Québec.

86-154 **TREMBLAY, C.** (1986). Géochimie des éléments du groupe des platinoïdes dans le dyke du lac Méquillon, Fosse de l'Ungava, Nouveau-Québec. Thèse de maîtrise.

**RÉSUMÉ / DESCRIPTION:**
L'intrusion du lac Méquillon est un dyke contenant une minéralisation importante de Ni-Cu-EGP. Le travail de cette thèse va s'élaborer autour des idées suivantes:
1) Vérifier si l'intrusion est de composition Komatiitique et voir si elle ne pourrait pas représenter une des phases magmatiques enrichies en métaux et en soufre responsable des gites de Ni-Cu-EGP qui se retrouvent un peu plus haut dans la stratigraphie.
2) A l'aide d'analyses isotopiques sur le soufre, déterminer sa provenance (magmatique ou sédimentaire).
3) Tester les différentes hypothèses concernant les mécanismes de concentrations des EGPs dans cette intrusion.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Fosse de l'Ungava, Nouveau-Québec.

86-155 **BUDKEWITSCH, P.** (1986). A Major Thrust Zone in the Northern Part of the Labrador Trough. B.A. Thesis, Department of Geological Sciences.

**ABSTRACT / DESCRIPTION:**
The Labrador Trough is essentially characterized by deep ocean floor volcanic and platformal sedimentary rocks. The contact between the variable siliclastic deposits of the Chioak Formation (alluvial fan deposit) and the dolomitic Abner Formation (shallow water carbonates) represents a major north-south trending structural and geomorphological boundary. This marks the western limit of allochthonous rock units in the northern Labrador Trough. Detailed examination of this contact reveals a major thrust fault. Cataclastic and mylonitic textures are present in the footwall rocks of the Chioak Formation. Structural and stratigraphic evidence indicates a SW directed overthrusting of approximately 25 kms of the hangingwall Abner Formation on top of younger Chioak units. The Abner, formally thought of as the gasal unit of the third depositional cycle, can now be correlated with the Denault dolomite of the second cycle.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Labrador Trough, Labrador.

86-156 **BUDKEWITSCH, P. and N. GOULET** (1986). Evidence for a Western Allochthon in the Northern Labrador Trough, New Québec. Paper, Geological Association of Canada Conference, Montreal, October 18, 1986.

**ABSTRACT / DESCRIPTION:**
The Labrador Trough is an early Proterozoic fault belt which trends from North to South in the Churchill province. The western part mainly consists of cratonic margin deposits. These units lie nonconformably or in fault contact with the Archean granulite rocks of the Superior province. Most of the margin deposits in the northern part have been considered as second and third cycle deposits. The first depositional cycle is exposed in the central and southern parts of the Labrador Trough. Generally the northern units are undeformed and dip gently East: however, some are clearly folded and faulted suggesting that they are not entirely autochthonous.
Recent examination between the variable siliclastic units of the Chioak Formation and the overlying (third cycle) dolomitic Abner Formation reveals a major structural and stratigraphic break. This contact occurs as a shear zone of varying thickness which dips gently towards the northeast and exhibits both brittle and ductile shear fabrics. The results combined with stratigraphic evidence strongly suggest that the Abner

Formation represents the western most allochthonous unit in the foreland of the northern Labrador Trough. The Abner Formation is therefore reinterpreted as the stratigraphic equivalent of the Default Formation in the second depositional cycle. In this hypothesis there would thus be no third depositional cycle.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Labrador Trough, Northern Québec.

86-157 **FALARDEAU, F.** (1986). Le système de fracturation tardif situé à l'est de la Fosse du Labrador. Thèse de baccalauréat, Département des sciences de la terre.

**RÉSUMÉ / DESCRIPTION:**
Une tectonique cassante affecte les roches métamorphisées dans la partie orientale de la Fosse du Labrador. Le mouvement a une composante essentiellement dextre. Deux zones contenant ces grandes failles tardi-tectoniques ont été reconnues d'une part du contact entre la séquence volcanique d'Hellancourt et les métasédiments du groupe de Laporte et d'autre part du contact oriental de ce dernier groupe avec les gneiss archéens.

**DISCIPLINE:** Géologie.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Fosse du Labrador.

86-158 **FALARDEAU, F.** (1986). Présence de pseudotachylites et leur relation avec les platinoïdes de la Fosse du Labrador. Affiche, Conférence nationale des étudiants en études nordiques, Ottawa, 18-19 novembre, 1986.

**RÉSUMÉ / DESCRIPTION:**
Une étude récente dans la partie nord de la fosse du Labrador aux environs de la Baie-aux-Feuilles met en évidence une série d'imbrications d'unités stratigraphiques plus vieilles, hautement métamorphisées, sur des unités mobiles plus jeunes, d'âge Aphébien, peu à très métamorphisées issues de l'érosion des premières. Trois épisodes de déformation de l'orogène Hudsonien (1750 Ma) ont été observées dans les séquences sédimentaires et volcaniques Protérozoiques. La région de la Baie aux Feuilles est particulièrement bien exposée pour permettre d'observer des failles majeures associées à des failles secondaires syntectiques. De minces niveaux pseudotachylitiques ont été observés dans les zones de dédoublement de la croûte terrestre. Le système de contraintes compressionnel orienté est - ouest est orthogonal par rapport à celui de Cape Smith situé à 400 Km plus au nord. L'orientation de l'étude est à caractère métallogénique régional: Les études structurales subséquentes serviront à établir un modèle de base pour le positionnement stratigraphique et structural de

gisements éventuels de platinoïdes, or, et autres métaux de base tels que Cu, Pb, Zn.

**DISCIPLINE:** Géologie.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Fosse du Labrador, Labrador.

86-159 **GOULET, N.** (1986). "Synthèse tectonique de la partie nord de la Fosse du Labrador". Rapport d'activités 1986, DV-86-14, p. 42, MERQ (Ministère de l'Energie et Ressources du Québec).

**RÉSUMÉ / DESCRIPTION:**
Les études structurales débaillées ont été complétées sur les blocs tectoniques suivants: les deux blocs du socle archéen à l'ouest et à l'est de la Fosse, le bloc compris entre la Formation d'Hellancourt et le socle à l'est de la Fosse ainsi que le bloc, à l'ouest du précédent, qui comprend les formations allochtones d'Abner, d'Harveng, de Baby et d'Hellancourt. Le relevé des éléments structuraux a été effectué à proximité des contacts des blocs. Ces contacts s'orientent approximativement N-S et délimitent les principales zones de chevauchement et/ou de cisaillement intense. Ces zones contiennent des mylonites, des ultramylonites (pseudotachylites) et une carbonatisation parfois très poussée.

**DISCIPLINE:** Géologie.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Fosse du Labrador.

86-160 **GOULET, N., F. FALARDEAU and C. HAMEL** (1986). Evidence for a Proterozoic Dextral Wrench Fault Zone in the Northern Labrador Trough. Research Report.

**ABSTRACT / DESCRIPTION:**
The Lake Rachel (L.R.) - Lake Olmstead (L.O.) fault zone in the northern Labrador Trough is characterized by en echelon folds, high angle dextral faults, an array of conjugate intersecting vertical fractures and normal faults which are typical of major wrench faults documented world-wide. Detailed structural analysis and mapping in the Leaf Bay area (west of Ungava Bay) shows that the fault zone is delineated by two major north-south trending high angle faults caused by a major stress oriented NE-SW. The horizontal displacement on the western set of faults (L.R.) is about 20 km with an important reverse movement to the SW. In the east, the L.O. fault, which forms the "eastern limit" of the Labrador Trough, shows almost no post metamorphic reverse movement, and the horizontal dextral component appears to be the major one. These late Trans-Hudsonian fault zones are possible reactivated early Hudsonian thrust vaults.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Labrador Trough.

86-161 **LABRECHE, Y.** (1986). Histoire de l'utilisation des ressources naturelles par les Inuit dans les estuaires de Kangiqsujuaq: perspective ethnoarchéologique. Thèse de doctorat.

**RÉSUMÉ / DESCRIPTION:**
L'auteur a effectué une reconnaissance archéologique au cours de l'été 1985 en collaboration avec deux Inuit dans la région de Kangiqsujuaq (Wakeham Bay) au Québec arctique. Deux zones estuariennes ont été explorées, et 25 sites, dont la majorité semblent historiques ou modernes, ont été découverts et répertoriés. Des camps de pêche, incluant entre autres des emplacements de tentes et des caches ainsi qu'un affleurement de stéatite exploité autrefois et aujourd'hui, ont fait l'objet d'une attention particulière. L'interprétation des données recueillies tient compte des témoignages des Inuit sur l'histoire de l'utilisation qu'eux et leurs ancêtres faisaient des lieux d'établissement, du poisson, du caribou ainsi que des roches ou minéraux comme la stéatite. Pour l'instant, l'étude du mode de subsistance montre que les Inuit fréquentaient les estuaires principalement pour la pêche d'été, au moment où l'omble chevalier s'y trouve en grand nombre. Il arrivait que les Inuit prenaient aussi quelques caribous, car au cours de cette même saison, ces grands mammifères terrestres venaient parfois se réfugier sur la côte. Les estuaires permettent donc le développement de stratégies d'acquisition et d'utilisation de ressources qui constituent une alternative ou un complément par rapport aux mammifères marins.

**DISCIPLINE:** Archéologie.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Kangiqsujuaq, Nouveau-Québec.

86-162 **ARCHAMBAULT, K. ET AL.** (1986). "The Effects of a Translated Tool on Pain Assessment". NURS 420, April 7, 1986.

**ABSTRACT / DESCRIPTION:**
Pain assessment in Cree-speaking patients over the age of 65 at Moose Factory General Hospital is often made difficult because of the existing language barrier between the patient and nurse. Using Peplau's Interpersonal Model of nursing as a theoretical framework, the effects of using a translated version of the McGill Pain Questionnaire will be examined to ascertain whether this tool improves pain assessment and pain management. Following an initial structured teaching session regarding implementation of the McGill Pain questionnaire, data will be collected for seven days concerning the depth of the nurse's pain assessment. Then, after a second in-service with respect to the modified model, the translated version will be administered for seven days and subsequent data collection and analysis will be completed. A subjective questionnaire regarding the nurse's selfperception of their pain assessment technique will be used and substantiated by objective chart audits during use of both the non-translated and translated versions. A positive correlation between pre- and post-translated versions of pain assessment is expected.

**DISCIPLINE:** Health/Medicine.

**FIELDWORK LOCATION:** Moose Factory, Northern Ontario.

86-163 **BERRY, J.W., J.A. BENNETT and K. PARSONSON** (1986). Syllabic Literacy and Cognitive Performance among the Cree and Ojibwa People of Northern Canada. Paper, 8th International Congress of the International Association for Cross-Cultural Psychology, Istanbul, July 6-10, 1986.

**ABSTRACT / DESCRIPTION:**
The cognitive consequences of literacy are widely presumed to be substantial, including increased abstraction in thought, greater logical precision, and higher general intelligence. In turn, socio-economic and cultural development are thought to be the eventual outcome of literacy (Olson and Watt, 1968). These presumed intellectual and social consequences, however, are largely undocumented (see Scribner and Cole, 1981, for a critical review).
A central theoretical and methodological problem is that literacy and formal education (schooling) are usually confounded as individual experiences and as social institutions. To examine the consequences of literacy per se, one needs to find a population in which literacy has become widespread in the absence of schooling. Further, such an ideal population should provide four categories of individuals:

those with and without schooling, crossed with those with and without literacy. However, the category "schooled, non-literate" is virtually impossible to find even though there are a few examples of the opposite category ("non-schooled, but literate") available for study.

The central question addressed in this study concerns the relative effects of schooling and syllabic literacy on cognitive test performance. From the regression analysis and the 2 x 2 analysis, it is clear that schooling has a major influence on Matrices (analytical and total scores, but less on the gestalt completion score), on Engbody and Engread, with a lesser influence on Spatial and Rotation. In contrast, Syllabics Reading is unrelated to these latter two tests (-.08 and -.13 simple correlations, shifting to .08 and .06 with grade partialled out). Thus, there is a clear relative degree of influence in favour of schooling over syllabic literacy. Within this generalization, however, there is a clear descending degree of school influence from Engread to Matrices (A and T) to Engbody to Rotation to Spatial to Matrices (G). And corresponding to this there is some relatively minor role for Syllabics Reading ability (which grade is partialled out), but never reaching significance.

A second issue is whether the relatively high level of spatial (and related abilities) reported in the literature for hunter gatherers in the Arctic (McShane and Berry, in press) might be a consequence of the widespread syllabic literacy found in the population, rather than to ecocultural adaptation (as proposed by Berry, 1966; 1976). It is evident that the influence of syllabic literacy on the present set of psychological tests is minimal, even when school is partialled out. Further analyses of the role of syllabics within the sub-sample (N = 52) of non-schooled syllabic literates might shed further light on this question, but the bimodal distribution of the Syllabic Reading variable (and hence the homogeneity of scores in the syllabic literate group) will limit the usefulness of this analysis.

**DISCIPLINE:** Psychology.

**FIELDWORK LOCATION:** Fort Albany, Northern Ontario.

86-164 **BRODSKY, L.M.** (1986). Correlates and Consequences of the Mating Tactics of Male Rock Ptarmigan (Lagopus mutus). Ph.D. Thesis, Department of Biology.

**ABSTRACT / DESCRIPTION:**

A marked population of rock ptarmigan (Lagopus mutus) breeding on the Melville Peninsula, Northwest Territories during the 1984 and 1985 breeding seasons was studied. In early spring, males arrived and established territories. During this time males encountered two types of intruders: Neighbours (familiar, mated, territorial males) and Bachelors (strange, unmated, non-territorial males). Resident-Neighbour contests were long, escalated battles. The persistence of intruding

Bachelors, due in part to their inexperience and the relatively high gains associated with winning, appeared to account for the differences in contest intensity. Females arrived 1-2 weeks after males and paired immediately. In 1984, a survey of the resulting mating patterns revealed bigamous, monogamous and bachelor males. These results strongly suggest that the comb is a target of sexual selection and that a novel, non-genetic trait, when similar in colour to the target, can also influence a male's mating success.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Melville Peninsula, N.W.T.

86-165 **CRAWFORD, B.** (1986). Recent Sediments of Pangnirtung Fiord, Baffin Island, N.W.T. Report, Department of Geography.

**ABSTRACT / DESCRIPTION:**
Pangnirtung Fiord is a large, weakly stratified fiord on Baffin Island, N.W.T., Canada. Samples of the surface sediment were taken along three transects normal to the fiord's long axis. The grain size distributions were analyzed for the fraction less than 2 mm in diameter. A large percentage of the dispersed samples consisted of material finer than 0.2 mm and this is beyond the capabilities of most measurement techniques. The major sediment source is the Weasel River that enters at the head of the fiord. Other sources include ice rafting, input from the fiord sides of colluvial material, aeolian deposition and shoreline erosion. Suspended clays from the Weasel River flocculate and rapidly settle when they reach the sea. As a result there is a an increase in mean grain size and a coarsening of sediment texture down fiord. There is a decrease in mean grain size away from shore along each transect due to normal hydraulic sorting. Local deposition of ice rafted debris results in a great variability in the size distribution between samples.
Flocculation is most apparent in samples near the Weasel River. A discrepancy exists between the size of agglomerates reported in the literature for suspended sediment, and the observed size of the agglomerates in the undispersed samples. This indicates that the floccules are broken down during deposition, by diagenesis, or during sampling and analysis. The dominant size for the in situ floccules was from 5.52 to 15.6 mm.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Pangnirtung Fiord, Baffin Island, N.W.T.

86-166 **GILBERT, R. and A. AITKEN** (1986). "The Biota of Intertidal Flats at Pangnirtung Fiord, Baffin Island, N.W.T." Naturaliste canadien, 113: 191-200.

**ABSTRACT / DESCRIPTION:**
A preliminary description of the biological environment of the intertidal flats, extending from approximately the mean tide level to the low water leap level, at Pangnirtung Fiord, eastern Baffin Island is presented. The macrofauna inhabiting the flats includes representatives from seven invertebrate phyla, of which molluscs and polychaetes are the most abundant. A macrofaunal zonation pattern, based on the mode of feeding, is observed with infaunal deposit-feeders predominating on the inner intertidal flats and suspension-feeders and grazers predominating in the outer intertidal zone. A variety of macroalgae also inhabits the intertidal environment, with the phaeophycean algae, Fucus distichus and f.vesiculosus contributiong the bulk of the vegetative cover on the intertidal flats. Two boulder barricades (inner and outer) are present and provide habitat for attached species. This region of the Canadian Arctic is of biogeographic interest in that it is situated close to the northern limit of a number of North Atlantic taxa. The association of Littorina sazatilis (Olivi), Macoma balthica (L.), Balanus balanoides (L.), Fucus vesiculosus (L.) and Clathomorphum circumscriptum (Stromfelt) Foslie, all subarctic species, places Pangnirtung Fiord within the marine Subarctic zone.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Pangnirtung Fiord, Baffin Island, N.W.T.

86-167 **GLEW, J.** (1986). An Underwater Camera System for Shallow Marine Work. Paper, National Student Conference, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**
During the last ten years, members of the Department of Geography at Queen's University have been engaged in research dealing with various aspects of arctic fiord sedimentation. In the last two years some of this work has been directed specifically towards the subtidal environment of Pangnirtung Fiord in Baffin Island (66°50'W. 66°10'N).
Knowledge of this subtidal environment has been obtained through such techniques as seismic and echo profiling, and by grab and box core sampling, the latter being the only method that enables one to examine the bottom surface directly. The need to view the undisturbed bottom conditions of the fiord over a wide area is important, particularly in the assessment of both the benthos, and the character of the sediments.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Pangnirtung Fiord, Baffin Island, N.W.T.

86-168 **GRATTO, C.L. and F. COOKE** (1986). Geographic Variation in the Breeding Biology of the Semipalmated Sandpiper. Report, Department of Biology.

**ABSTRACT / DESCRIPTION:**
Interspecific comparisons of breeding biology provide a powerful tool for investigating the adaptive significance oflife history features (Stearns 1976, 1980, Brown 1983). However, few studies have examined the adaptive significance of intraspecific geographic differences (Leggett and Carscadden, 1978; Murphy 1978, 1983). Here we examine the adaptive relationship between breeding biology and climate in two widely separated populations of Semipalmated Sandpipers Calidris pusilla.
The Semipalmated Sandpiper is a small, monogamous, migratory shorebird, which breeds in the low arctic region from the Alaskan coast across Canada to northern Québec, central Baffin Island and northern Labrador (Godfrey 1966, Lank 1983). We studied its breeding biology at the Queen's University Tundra Biology Station at La Pérouse Bay (54°24'N 94°24'W), 40 km east of Chruchill, Manitoba, close to the southern limit of its breeding range. Here we present data from 1980 to 1983, when Semipalmated Sandpipers were observed in a 2 km$^2$ area in the delta of the Mast River. Methods and study area are described in Gratto et al. (1985). A previous study was conducted by Safriel (1971, 1980, Ashkenazie and Safriel 1979 a, b) from 1968 to 1973 at Barrow, Alaska, in the northwest of the breeding range; 1400 km farther north than La Pérouse Bay.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** La Pérouse Bay, Manitoba.

86-169 **HAMANN, J. and F. COOKE** (1986). Age Effects on Clutch Size and Laying Dates of Individual Females in Lesser Snow Geese. Research Report, Department of Biology.

**ABSTRACT / DESCRIPTION:**
Previous studies of Lesser Snow Geese have reported age effects on clutch size for age classes 2, 3 and 4, but no difference among birds between 5 and 12 years of age (Rockwell et al. 1983). We examined whether laying date showed a similar pattern. We found that laying date advances only up to the age of 4. To determine whether the same patterns held when individual females were considered, known-age females for which measurements of clutch size and hatch date were available for at least two seasons were selected and a backdated laying date was calculated for each sighting. Since considerable annual variation occurs in the timing of laying (Findlay and Cooke 1982b) and in mean clutch size (Rockwell et al. 1983), laying dates and clutch sizes were expressed as deviations from the annual means. Then, a series of paired t-tests was performed on clutch sizes and laying dates of individual females seen breeding at the age of two, three, and four years old and as

adults. If more than one observation was available for a female breeding as an adult, a mean clutch size and a mean laying date were computed and used in the analysis. The results indicate that laying date of individual females seen breeding in at least two seasons advances up to the age of four. The same pattern is observed for clutch size but, in this case, no significant increase could be detected between the age of two and three or three and four, even though a definite trend was present.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** La Pérouse Bay, Manitoba.

86-170 **HIK, D.S.** (1986). *Local Philopatry and Dispersal in the Lesser Snow Goose: The Role of Reproductive Success.* B.Sc. Thesis, Department of Biology.

**ABSTRACT / DESCRIPTION:**
The causes and effects of dispersal, philopatry and reproductive success in the lesser snow goose (*Chen caerulescens caerulescens*) were studied. About 65% of the snow geese at the La Pérouse Bay, Manitoba breeding colony are faithful to the same nesting region between years. Adult females were most likely to move if they suffered a reduced number of goslings leaving the nest, or suffered partial brood loss soon after leaving the nest. Breeding dispersal was not significantly correlated with egg loss during incubation. Breeding dispersal was independent of age, but did depend on the region of the colony where the nest was located. Previous explanations of breeding dispersal have accounted for this movement in terms of environmental heterogeneity and the differential availability of nesting areas between breeding seasons (Cooke and Abraham 1980). A reduction in reproductive success associated with the loss of goslings, may also be an important determinant influencing breeding dispersal. The interaction between various factors was not determined. The reproductive consequences of breeding dispersal were also examined. Philopatric individuals were found to have reduced hatching success and a greater number of abandoned goslings relative to non-philopatric individuals. Some problems associated with measuring the influence of dispersal on subsequent reproductive success are discussed.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** La Pérouse Bay, Manitoba.

86-171 **HIK, D.S.** (1986). "Northern Harrier Predation on Willow Ptarmigan". *Wilson Bulletin*, 98(4): 597-600.

**ABSTRACT / DESCRIPTION:**
There are few reports of Northern Harriers (*Circus cyaneus*)

killing ptarmigan, although Braum and Rogers (1971) observed a harrier stooping on 2 white-tailed ptarmigan (*Lagopus leucurus*). In North America, small mammals and birds comprise most of the diet of harriers (Watson 1977). In Scotland, however, Jenkins et al. (1964) found that harriers killed a substantial number of Red Grouse. Here we document Northern Harrier predation on Willow Ptarmigan and detail the responses of the prey to presence of harriers during the breeding season in northern Canada. We suggest that harriers may be more important predators on ptarmigan, especially hens with nests, than has been reported previously. Interactions between Northern Harriers and Willow Ptarmigan were observed in 3 populations in northern Canada between 1978 and 1985. A population of Willow Ptarmigan (*L.l.albus*) was investigated at La Pérouse Bay near Churchill, Manitoba (58°24'N, 94°24'W), from 1981 to 1985 (Martin 1985). SJH studied populations of *L.l.albus* during 1978.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** La Pérouse Bay, Manitoba.

86-172 **HORVATH, V.V.** (1986). *Glacimarine Sedimentation in Cambridge Fiord, Baffin Island, N.W.T.* M.Sc. Thesis, Department of Geography.

**ABSTRACT / DESCRIPTION:**
Cambridge Fiord is located on the northeastern coast of Baffin Island. It is 60.8 km long with a surface area of 219 km$^2$ and a maximum depth of 08 m. The fiord is divided into three separate basins which are limited by sills. Glacimarine sediments are dominant throughout.
Six piston cores, recovered from Cambridge Fiord during the sedimentology of Arctic Fiords Experiment (Project S.A.F.E.) cruises of 1982 and 1983, form the data base of this research. Analysis of the sedimentology and paleomagnetic stratigraphy of these sediments is used to determine the glacimarine processes operating in this basin.
Each of the six cores were examined in detail. The three major types of sediment identified on the basis of their mode of deposition are: (1) overflow (2) ice-rafted and dropped sediments, and (3) sediment which has grain flows. This initial classification is further subdivided into seven lithofacies which are directly related to the nature of the sediments and the control exerted by basin morphometry.
Correlation between cores, solely on the basis of physical characteristics was not possible. Different parts of a sedimentary basin develop distinctive stratigraphies, reflecting local variations in the paleogeographic evolution. It is highly probable that the individual cores used in this study may not contain a complete record of climatic change for this region of Baffin Island.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Cambridge Fiord, Baffin Island, N.W.T.

86-173 LYON, B.E. and R.D. MONTGOMERIE (1986). "Delayed Plumage Maturation in Passerine Birds: Reliable Signaling by Subordinate Males?" Evolution, 40(3), 605-615.

**ABSTRACT / DESCRIPTION:**
Three hypotheses (Cryptic, Female Mimicry, and Winter Adaptation) have been proposed to explain the occurrence of delayed plumage maturation (DPM) in passerine birds. We show that each of these hypotheses is really a composite of two different questions about: 1) the proximate function of dull plumage in second year (SY) males and 2) the selective mechanism that has favored that proximate function. We review the three hypotheses in the context of this distinction, and we find little evidence clearly supporting any of them. We propose a new Status Signaling Hypothesis (SSH) suggesting that dull SY male plumage is a reliable signal of subordinance. We suggest that female choice based on male plumage color (as an index of male quality) is the selective mechanism that has favored subordinate status signaling by SY males. If females prefer bright males, then dull plumage may be a reliable signal of subordinance and SY males may experience reduced levels of aggression from adult males. Male characters (like plumage color) are most likely to be the object of female choice when males defend simple nesting territories with little or no variation in territory quality. In such a system, SY males with low resource-holding potential would benefit (via matings or experience) by signaling subordinance and being allowed to settle among more brightly colored adults. Thus, DPM is expected to be more prevalent when males defend simple nesting territories. This prediction of the SSH is supported by data from the literature-a significantly higher proportion of species with DPM defend simple nesting territories (versus all-purpose territories) than do species without DPM.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Sarcpa Lake, N.W.T.

86-174 LYON, B.E. ET AL. (1986). Male Parental Care and Monogamy in Snow Buntings. Report, Department of Biology.

**ABSTRACT / DESCRIPTION:**
Males from a random sample of 13 snow bunting (Plectrophenax nivalis) pairs were experimentally removed to determine the influence of male parental care during one nestling period on reproductive success. Widowed females increased their rate of food delivery to nestlings by increasing their feeding visit rate but not their load size. However, Widows were only able to achieve 73% of the food delivery rate of Control pairs and, as a result, they raised fewer offspring of lower quality (i.e. lower mass at fledging). Total brood mass raised by Widows was

only 55% of that of Control pairs. Thus, in the year of our experiment, male parental care in the nestling period almost doubled the reproductive success realized from a brood. The experiment, however, was done in a year of poor food availability and data from the previous year, when food supply was higher, indicate that males may not always be so important. Since nestling food supply appears to be unpredictable at the time of pair formation, we suggest that male parental care is a bet-hedging strategy in case of poor food availability. As a consequence the importance of male parental care in some years may explain why snow buntings are almost always monogamous.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Sarcpa Lake, N.W.T.

86-175 **MARTIN, K. and F. COOKE** (1986). Bi-parental Care in Willow Ptarmigan. Report, Department of Biology.

**ABSTRACT / DESCRIPTION:**
Willow ptarmigan (Lagopus lagopus) usually pair monogamously and both parents invest considerable time and energy in the care of offspring. However, the species is occasionally polygynous (5–9%), and in these cases only the females care for offspring. To examine the consequences of uniparental care for production of offspring and condition of mates, natural removals of either the male or female parent were observed at the onset of incubation and at hatch. Lone hen willow ptarmigan (widows) defended eggs and incubated clutches successfully, whereas single parent males (widowers) did not. After hatch, widows (mates removed either at the onset of incubation or at hatch) and pairs raised equivalent numbers of chicks to fledging, but widowers (mate removed at hatch) were less successful. We observed no differences between parental types in numbers of offspring returning in a subsequent season or in the mating status of offspring in the first year of return. Widows and paired hens had similar rates of survival during the breeding season, and in subsequent years, similar return rates and mate fidelity. It has been shown that willow ptarmigan, after the onset of incubation, provided more parental care than is required to produce offspring and maintain survival and body condition of their mates.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Sarcpa Lake, N.W.T.

86-176 **McLAUGHLIN, R.L. ET AL.** (1986). Optimal Foraging: The Marginal Velocity Theorem. Research Paper, Department of Biology.

**ABSTRACT / DESCRIPTION:**
(1) We use the marginal value theorem (Charnov 1976) to

predict the optimal travel speed for a foraging animal as it moves between patches of food. Our model assumes that the cost of travel (J/s) increases exponentially as travel speed increases, and that the animal maximizes its net rate of energy gain while foraging.

(2) Our analytical result is the same as Norberg's (1981) solution for the optimal travel speed for altricial birds maximizing the net rate of energy delivery to their young. Our model differs, however, in that it explicitly maximizes the net rate of energy gain, and it adjusts travel speed and search time simultaneously, since the optimal patch residence time depends on travel costs (time and energy), and thus travel speed. Further, we provide a simple graphical model which clearly shows the relationship between travel speed, and the optimal search time and load size for a patch.

(3) Our model makes three predictions. First, a foraging animal should travel faster than the speed which maximizes the distance travelled per unit energy expended (the maximum range speed). Second, the optimal travel speed increases as the animal's food collecting rate at a patch increases. Finally, the optimal travel speed should decrease as travel distance increases since the animal's net rate of energy gain declines with increasing travel costs. This latter prediction has not been fully appreciated before. Some preliminary support from the literature is presented for each prediction but there have been few investigations of the travel speed of foraging animals. We feel that our model provides a useful theoretical framework for such studies.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Sarcpa Lake, N.W.T.

86-177 **MONTGOMERIE, R.D. and R.V. CARTAR** (1986). "The Influence of Weather on Incubation Scheduling of the White-Wumped Sandpiper (Calidris fuscicollis): A Uniparental Incubator in a Cold Environment". Behaviour 95: 261-289.

**ABSTRACT / DESCRIPTION:**

We studied the incubation scheduling of 8 white-rumped sandpipers (Calidris fuscicollis), a species in which only the female incubates. Because the female is small and nests in the high arctic, these birds are probably under more cold stress than birds nesting in the temperate zone. We examined the individual and collective effects of several weather variables on a female's incubation behaviour to ascertain what amount of the variability within a day was directly attributable to weather conditions.

Birds made an average of 25.1 off-nest trips each day, averaging 10.5 min. each. This resulted in spending on average, 82.5% of their time incubating eggs. There was a clear within-day cycle in incubation scheduling; birds made more and longer trips in the middle of the day and, as a result, spent more total time off the nest in that period.

Birds adjusted their hour-by-hour schedules to weather largely by altering the number of trips made, and less so by adjusting trip length. There was a circadian rhythm in recess time/h, explaining at least 11% of the variation in recess time/h. When the circadian rhythm was controlled statistically, weather accounted for an average of 38% of the explainable variation in recess time/h. The relative importance of each weather variable on the recess time/h was (in descending order of importance): wind speed, air temperature, solar radiation, barometric pressure, and relative humidity.

Weather (primarily wind speed and temperature) exerted its strongest effects early and late in the bird's active day (0400-2300 h). On cold and windy days birds increased the time spent on their nests early and late in the day, and made more trips than usual in the middle of the day, when air temperature was highest. We suggest that the incubation scheduling of these birds conformed to the long-term predictability of the daily weather cycle by following a circadian rhythm of behaviour modified by a response to concurrent weather that would have reduced egg cooling.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Sarcpa Lake, N.W.T.

86-178 **MONTGOMERIE, R.D. and B.E. LYON** (1986). Ecological Correlates of Incubation Feeding: A Comparative Study of High Arctic Finches. Research Report, Department of Biology.

**ABSTRACT / DESCRIPTION:**

We compared the ecology of two high arctic finches to try to determine which ecological factors might influence male parental roles during incubation. Male snow buntings feed their mates at the nest throughout the incubation period, while male Lapland longspurs usually do not. We identified and tested 7 ecological factors that could potentially explain the difference between these two species; (i) risk of nest predation, (ii) nesting synchrony, (iii) potential for polygyny, (iv) timing of breeding, (v) diet, (vi) distance between nest and foraging areas, and (vii) nest microclimate. Buntings nest in rock cavities and suffer lower overall nest predation than longspurs, suggesting that this factor could influence the occurrence of incubation feeding. However, since male longspurs could feed their mates away from the nest, risk of nest predation can only explain why incubation feeding at the nest does not occur, not why incubation feeding *per se* is absent in longspurs.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Sarcpa Lake, N.W.T.

86-179 **SMOL, J.P. and M.S. DOUGLAS** (1986). Freshwater Diatom Assemblages from Cape Herschel, Ellesmere Island, Canadian High Arctic: Preliminary Survey and Ecological Relationships. Research Report, Department of Biology.

**ABSTRACT / DESCRIPTION:**
Over the last three years, a comprehensive survey of freshwater habitats in the Canadian High Arctic has been initiated, in association with the Geological Survey of Canada. One of the long term objectives of this program is to eventually use these data in paleoecological reconstructions. This report provides a preliminary survey of the freshwater diatoms recorded from the lakes, ponds, and streams on Cape Herschel (78°40'N, 74°45'W). Although diatom diversity within each study site is usually low, a relatively large number of taxa have been recorded on the Cape. Benthic species overwhelmingly dominate the assemblages. Preliminary attempts at correlating diatom distributions with ecological variables will be presented.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Ellesmere Island, N.W.T.

**86-180** **COMEAU, C.** (1986). The Indian Economy of Teslin, Yukon Territory. B.A. Thesis.

**ABSTRACT / DESCRIPTION:**
Much debate has taken place over the last couple of decades as to the viability, let alone the very existence of a Northern native economy based on hunting, fishing, trapping and wage work. Native lifestyles have come under close scrutiny as a direct result of Thomas Berger's The Report of the Mackenzie Valley Pipeline Inquiry. Berger determined that a viable mixed economy does exist in the Canadian North and imposed a 10 year moratorium on the building of the pipeline to allow the development and strengthening of the renewable resource sector and the settlement of Indian land claims. This paper examines some of the debates over the prospects of a viable mixed economy in the North (North of $60^{\circ}$ latitude). Ways of estimating the value of domestic harvests which are important culturally and economically are considered. Problems involved include determining the actual volume of production, evaluating the income in kind generated, and assessing the intangibles. It is concluded that a viable mixed economy does exist, is usually underestimated and that it makes a considerable contribution to the welfare of Northern natives.

**DISCIPLINE:** Human Geography.

**FIELDWORK LOCATION:** Teslin, Yukon.

86-181 **BRADLEY, M.** (1986). Hunting Ecology of the Tundra Peregrine Falcon. Report.

**ABSTRACT / DESCRIPTION:**
Radiotelemetry is used to delineate home range and range use overlap between pairs of Peregrine falcons near Rankin Inlet, N.W.T. Radio transmitters attached to breeding male falcons during the early nestling stage permit relocation by triangulation. Use of prey is documented by taking prey remains at the nest and by recording the number of feedings per day at the nest. Pesticide levels in the population are monitored by the taking of blood samples from captured adults and by collection of addled eggs from the nest. Turnover and mortality of the breeding populations can be calculated from identification of banded adults at the eyries.

**DISCIPLINE:** Zoology.

**FIELDWORK LOCATION:** Rankin Inlet, N.W.T.

86-182 **LIPSETT, K.A.** (1986). Verbal Tradition, Pictographs, and the Traditional Cree Belief System. Report.

**ABSTRACT / DESCRIPTION:**
Ethnographic fieldwork has been carried out in northern Saskatchewan in order to collect and analyse the stories of the traditional Cree belief system as a means of relating the major motifs of the verbal tradition to the pictographs of the region. It was theorized that the images represented in pictographic form could be correlated to the descriptive images and the personalities of characters presented in the legends and folktales of the Cree pre-contact culture.

**DISCIPLINE:** Anthropology.

**FIELDWORK LOCATION:** Northern Saskatchewan.

86-183 **McIVER, E.** (1986). High Arctic Fossil Cedars. Poster, National Student Conference on Northern Studies, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**
Recent collections of plant megafossils from Ellesmere and Axel Heiberg Islands are contributing to our understanding of early Tertiary floras of northern Canada. Of particular interest is the recovery of remains, both leafy branches and seed cones, of cedars from 60 million year old sediments of Ellesmere Island. Since taxonomy of modern conifers is based primarily upon reproductive features, the discovery of seed cones is

significant. Fossil foliage and cones of the cedar resemble most closely those of Thuja plicata, the western red cedar of the Pacific coast. Unlike present vegetation of Canada, with arctic through temperate zonation, early Tertiary vegetation appears to represent a more cosmopolitan temperate geoflora. Extensive forests of Metasequoia (dawn rewood), Glyptostrobus (swamp cypress), Cercidiphyllum (katsura), and birch covered much of Canada from the southern border to Ellesmere Island. In addition to these four nearly ubiquitous taxa, our collections reveal associated forms including ferns and members of the sycamore, walnut, oak, lindon, and other families. Continuing work on the fossil plants of northern Canada is increasing our appreciation of diversity and distribution of early temperate floras, and helps us to understand the origin and evolution of the modern floras of Canada.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** Ellesmere and Axel Heiberg Islands, N.W.T.

86-184 **SCANLON, V.** (1986). Ethnographic Investigations in the Upper Churchill River Basin. Report.

**ABSTRACT / DESCRIPTION:**
The purpose of the 1986 project was to observe and record the activities of native peoples who still 'lived off the land' as their primary means of subsistence. In an archaeological context this type of information is valuable as another tool to assist in the reconstruction of prehistoric lifeways. The collection of ethnographic data has been a valuable experience to: understanding the processes involved in harvesting, smoking and drying meat and fish; the methods, stages etc. of hide preparation; the sexual division of labour at the hunting and fishing camps, and the patterns of social and demographic organization required to successfully exploit the environment.

**DISCIPLINE:** Anthropology.

**FIELDWORK LOCATION:** Upper Churchill River Basin, Northern Saskatchewan.

86-185 **WEICHEL, B.J.** (1986). Variation in Wild Rice (Zizania palustris) Stands across Northern Saskatchewan. Paper.

**ABSTRACT / DESCRIPTION:**
Variations in wild rice (Zizania palustris L.) morphology and stand productivity have been evaluated for 20 sites across northern Saskatchewan. Although considerable within-stand variation occurred, significant between-site differences were also detected, and regional trends were clearly evident. Plant development was more rapid in the eastern part of the province, and harvest began about 1 week earlier here. However, in the west, individual plants were typically more robust, tillering

was more common, and the number of florets borne on the panicle was generally larger. Consequently, potential seed production from an individual plant was highest in these western districts, although differences in stem density and seed weight at the various sites offset individual plant performance to some extent. Differences in water temperature and water depth occurred across the province in July, while in August, water depth, pH, and conductivity were significantly correlated with longitude. Water depth and pH were most strongly related to plant performance, shallower water and higher pH being characteristic of the western sites.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** Northern Saskatchewan.

**86-186** **MacHUTCHON, G.** (1986). Ecological Data for the Management of Yukon Black Bears. Research Report.

**ABSTRACT / DESCRIPTION:**
Between May 15 and August 20, 1984, 59 scats and 1 stomach were collected from the Pelly River Valley near Ross River for food content analysis (MacHutchon 1985). Herbaceous material comprised 44% of the total diet volume and various fruits comprised 51%. Animal matter, particularly insects, were frequently encountered in scats but only made up 3% of the total diet volume. Horsetail, bearberry, soapberry and crowberry were identified as the most important food items. Their importance varied seasonally, presumably as a result of changes in availability (MacHutchon 1985).
A temporal summary of food habits revealed similar trends in seasonal use as that reported for other northern black bear populations. Herbaceous material is important in the summer, fruit is added as it becomes available and animal matter (usually insects) is used opportunistically during the summer (Penner et al. 1980, MacHutchon 1985). Overwintered berries, particularly bearberries and blueberries, appear to be important to black bears early in the spring before herbaceous vegetation greens. The prominence of overwintered berries in the spring diet of black bears has not been reported for other areas. It may be necessary for bears to make use of berries early in the spring because of a delay in emergence of suitable herbaceous vegetation. Further research is necessary to determine whether feeding on overwintered berries is common in the spring or whether it is simply an artifact of the sample year.

**DISCIPLINE:** Resource Management.

**FIELDWORK LOCATION:** Pelly River Valley, Yukon.

**86-187** **MAI, N.** (1986). Assessment of Forage Production in Habitats of Wood Bison in the Nisling River Valley, Yukon Territory. Research Report.

**ABSTRACT / DESCRIPTION:**
The goal of the research was to assess forage production in four habitat types in the Nisling River valley. The objectives were: to examine and map the site as habitat for wood bison; to measure the standing crop and annual biomass production in the habitat types, and; to assess potential carrying capacity of the site for wood bison.
Combining forage production data and computer analysis of aerial photographs to assess wood bison habitat is a new technique. Historically, estimation has relied upon subjective survey methods of both habitat extent and forage species

utilization. These procedures have led to transplants of animals into areas of poor suitability.
The wood bison transplant to the Yukon represents an opportunity to study the application of this new technique. The good forage production data and aerial photography inventory form the basis for this study. Accurate estimates of carrying capacity will assist in detailing long-term management strategies for these bison.

**DISCIPLINE:** Resource Management.

**FIELDWORK LOCAITON:** Nisling River Valley, Yukon.

86-188 **YAREMCHUK, G.C.B.** (1986). "Results of a Nine Year Study (1972-80) of the Sport Fishing Exploitation of Lake Trout (Salvelinus Namaycush) on Great Slave and Great Bear Lakes, N.W.T.: The Nature of the Resource and Management". Canadian Technical Report on Fisheries and Aquatic Sciences, 1436: 80.

**ABSTRACT / DESCRIPTION:**
Data from creel census, tagging, and experimental gillnetting at sport fishing lodges on Great Slave and Great Bear lakes are examined in order to ascertain the status of lake trout (Salvelinus namaycush) stocks in the lakes and develop a rationale for their management. Tag returns suggest that a small percentage of trout move long distances but the average movement is so small that the fish in different areas of the lake, exploited by different lodges, should be managed as separate stocks. The lake trout in Great Slave Lake grow more quickly than those in Great Bear Lake, particularly at larger sizes. Lake trout in Great Slave Lake mature at ages 7-14 while those in Great Bear Lake mature at ages 10-16. Historical yields, particularly of extremely large fish from Great Bear Lake, exceed equilibrium yield predictions generated by a Ricker yield per recruit model. However, yields have decreased to approximately 0.4 kg/utilized ha on Great Slave Lake and approximately 0.3 kg/ha on Great Bear Lake, lower than the estimated maximum sustainable yields for inshore areas of 0.60 kg/ha for Great Slave Lake and 0.36 kg/ha for Great Bear Lake.
Effects of exploitation level on angling quality and possible alternate uses of the resource are discussed. A socio-economic study of the values of the resource to various uses and limitation of aggregate yields to prevent management of the resource for short-term objectives is recommended.

**DISCIPLINE:** Resource Management.

**FIELDWORK LOCATION:** Great Slave and Great Bear Lakes, N.W.T.

86-189 **BAZELY, D.R. and R.L. JEFFERIES** (1986). "Changes in the Composition and Standing Crop of Salt-marsh Plant Communities in Response to the Removal of a Grazer". Journal of Ecology, 74: 693-706.

**ABSTRACT / DESCRIPTION:**
(1) Changes in species composition, live standing crop and plant litter have been measured in a salt marsh at La Pérouse Bay, Manitoba in the presence of a grazer (the lesser snow goose, Anser caerulescens caerulescens) and when the grazer is excluded.
(2) The composition of vegetation in exclosures (5m x 5m) changed rapidly. After five years sixteen species in an adjacent (control) grazed area. Dicotyledons, such as Patentilla egedii and Plantago maritima, increased in frequency in the absence of grazing, and Carex subspathacea replaced Puccinellia phryganodes as the dominant graminoid.
(3) New species, which appeared in the exclosure, were present in ungrazed areas elsewhere in the marsh. However, the frequency of these species in the exclosures was different from that in ungrazed areas.
(4) The grazer is a generalist in its selection of forage species. The removal of geese leads to extensive clonal growth of species, such as Potentilla egedii, which are unable to tolerate heavy grazing and tramping, unlike Carex and Puccinellia.
(5) Within a season the standing crop of vegetation was highest in exclosures erected one or two years previously. Litter accumulated in exclosures. The ratio of maximum standing crop to litter fell from >4:1 to <2:1 as communities aged in the absence of grazing.
(6) Cessation of grazing leads to rapid changes in the structure and composition of the community. The vegetation within an exclosure was poorly grazed when the fence was removed after two years.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** La Pérouse Bay, Manitoba.

86-190 **BERGERON, J.-F.** (1986). Correlations between Plant Cover, Biomass and Soil Moisture Parameters from Nine Arctic Areas. Poster, National Student Conference on Northern Studies, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**
The relationships between the following parameters: plant cover and biomass, biomass and soil moisture, and plant cover and soil moisture are discussed for the plant communities of three Low Arctic areas and six High Arctic areas. Several

authors (Svoboda, 1974, Webber, 1978, Bliss and Svoboda, 1984) suggested that significant correlations between the aforementioned pairs of parameters exist. In this study vascular plant cover, above ground biomass, gravimetric and volumetric soil moisture were correlated by using the product-moment correlation and the Spearman's rank correlation. Our results indicate that the above correlations may not necessarily apply for the whole Arctic. The variations in growth forms are probably responsible for the lack of significant correlations on a large geographical scale.
A positive correlation between plant cover and biomass was observed for four out of seven localities studied. However, the shrub-dominated communities did not support this trend. The cover values should be used with caution as an indicator of the standing crop. The data of vascular standing crop and soil moisture of four authors suggested that the highest phytomass values are found in mesic sites while the lowest occur in dry and wet sites. The data from two locations indicated that the last relationship cannot be generalized for the whole Arctic. Vascular cover and soil moisture were positively correlated for five out of eight locations. This relationship is valid where the vascular plants constitute the major components in plant communities, such as some polar oasis of the High Arctic. A greater number of biomass, plant cover and soil moisture data from the Low and the High Arctic are needed to verify the presented relationships.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** Canadian Arctic.

86-191 **CANITZ, B.T.** (1986). Proposed Study of Isolated Post Nursing. Paper Annual Meeting, Nurse Practitioners Association of Ontario, Toronto, April 1986.

**ABSTRACT / DESCRIPTION:**
For decades, nurses have provided comprehensive health care in isolated areas of Canada, in the milieu of a different culture in small, remote, northern communities with virtually no on-site backup assistance from other health care workers. They provide this care within the limitations of a harsh environment, personal and professional isolation, and unpredictable transportation and communication. Turnover of nursing staff is high affecting the quality and continuity of health care programs.
The objectives of this research project are to explore occupational, social, structural, and environmental factors that promote or mitigate against stress and subsequent burnout. Our general hypothesis is that burnout is a function of high stress levels accompanying high levels of isolation and feelings of lack of control. The primary variables of this study are isolation, gender, power, culture, and stress.
This study consists of two parts: 1) a self administered mailed questionnaire, and 2) specific onsite visits. Nurses in

the nursing stations of Baffin Island and the Yukon are the primary subjects of this study. Select teacher populations in these areas will serve as the comparison group. The questionnaire consists of a variety of questions about the individuals lifestyle, their work and the communities they live in. The onsite visits in each community will consist of informal interviews with all nurses plus a systematic 24-hour time matrix on one randomly selected nurse. The onsite data will add to the general body of information plus serve as a means of checking the validity and reliability of the aggregate questionnaire data.

**DISCIPLINE:** Health/Medicine.

**FIELDWORK LOCATION:** N.W.T. and Yukon.

86-192 **FOURNIER, A., J.T. GRAY et J.-F. BERGERON** (1986). Utilisation de la végétation pour l'interprétation géomophologique d'un secteur de l'Ungava, à partir des images Landsat-4. Rapport, 54$^{e}$ Conference de l'ACFAS, Université de Montréal, 17-21 mai, 1986.

**RÉSUMÉ / DESCRIPTION:**
La relation étroite existant entre la végétation des milieux nordiques et les conditions de surface est un élément important pour l'interprétation des formes de terrain en l'absence de modèle numérique d'élévation. La cartographie des principales communautés végétales du secteur d'Asbestos Hill, en Ungava, effectuée à partir de la caractérisation sur le terrain de la végétation et de la géomophologie de l'ensemble du secteur à l'étude. Une autre technique envisagée est l'utilisation de l'attribut des plantes à répondre de façon distincte à leur environnement pour l'indentification des groupes lithologiques sous-jacents. Le secteur à l'étude possède des contrastes lithologiques suffisamment importants, croyons-nous, pour permettre l'utilisation de la réponse spectrale des plantes pour l'identification lithologique en périphérie des affleurements . L'utilisation d'images TM, de juillet 84, devrait permettre une classification des différentes unités de surface pour ensuite procéder à une cartographie des composantes majeures du paysage.

**DISCIPLINE:** Géographie physique.

**LIEU DE TRAVAIL SUR LE TERRAIN:** Ungava, Québec nordique.

86-193 **GRAHAM, P.C.** (1986). The Hydrology of a Ground Ice Slump, Banks Island, N.W.T., Canada. B.Sc. Thesis, Department of Geography, Erindale College, 47 p.

**ABSTRACT / DESCRIPTION:**
A hydrologic study of a moderately sized ground ice slump (7,750 $m^2$) was conducted on the southwest coast of Banks

Island, N.W.T., between June 1 and July 23, 1984. The major inputs and outputs of the hydrologic cycle were measured or estimated for the slump.

The results indicate that the slump displays 3 hydrologic periods, with inputs dominated by snowmelt, ice melt and precipitation. If viewed as a stream, surface flow in the slump can be considered to possess a modified arctic nival flow regime. While surface flow is visually significant in the slump, evaporation has a greater influence upon the water balance. Buried ground ice ablation appears important as an input. Antecedent soil moisture conditions were found to have a significant influence upon the generation of surface flows, suggesting that the slump follows the concepts of partial and variable runoff generation.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Banks Island, N.W.T.

86-194 **HENRY**, G. (1986). Structure and Production of Sedge Meadow Communities in the Alexandra Fiord Lowland. Ph.D. Thesis.

**ABSTRACT / DESCRIPTION:**

Wet-mesic sedge meadows covered 20% of an 800 ha high arctic coastal lowland at Alexandra Fiord (AF) (78°53'N, 75°55'W), Ellesmere Island. The Af Lowland is a polar desert oasis, with an enhanced radiation regime (due to reflection from surrounding glaciers, cliffs and sea ice), warmer air and soil temperatures, and lower windspeeds than the surrounding Polar Desert.

There was little variation in solar radiation (July mean = 19 MJ $m^{-2}$ $d^{-1}$) and air temperature (July mean = 6.5°C) between the 5 studied growing seasons (1980-84). Date of snowmelt did vary between seasons, although the effective growing season was of similar length (55-60 d). Sensible heat was the major (58%) pathway for dissipation of net radiation, despite the wet soil conditions. A thick cover (60-80%) of litter and attached dead matter inhibited evapotranspiration. In meadows with a hummocky microtopography, hummocks were warmer and had deeper active layers than hollows.

The AF meadows are litter-dominated because of the lack of large herbivores (muskoxen). It appears that these meadows may have never been grazed by muskoxen. A comparison with nearby grazed meadows at Sverdrup Pass (60 km NW of AF Lowland) suggested that these meadows could benefit from moderate grazing in terms of nutrient cycling and net production.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** Alexandra Fiord Lowland, Ellesmere Island, N.W.T.

86-195 **HENRY, G., B. FREEDMAN and J. SVOBODA** (1986). "Effects of Fertilization on Three Tundra Plant Communities of a Polar Desert Oasis". Canadian Journal of Botany, 64: 2502-2507.

**ABSTRACT / DESCRIPTION:**
Three plant communities studied at a high arctic oasis on Ellesmere Island responded to nutrient addition. Response to nitrogen was greatest in the driest community and weaker in the more mesic and wet-mesic communities. Nutrient addition resulted in (i) increased inflorescence densities of dicoryledonous and certain graminoid species; (ii) increased tiller densities of wet sedge species; and (iii) increased net production of graminoids and forbs at high rates of application, and in some dwarf shrubs at lower rates. These results parallel those of studies at lower latitudes in the Arctic, and support the hypothesis that arctic ecosystems are typically oligotrophic.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** Ellesmere Island, N.W.T.

86-196 **HENRY, G., B. FREEDMAN and J. SVOBODA** (1986). "Survey of Vegetated Areas and Muskox Populations in East-central Ellesmere Island". Arctic, 39(1): 78-81.

**ABSTRACT / DESCRIPTION:**
The results of 1981-84 summer helicopter surveys and ground reconnaissance of east-central Ellesmere Island are presented. This was the first systematic ecological survey to be conducted in this region of the Canadian High Arctic. Central Ellesmere Island is dominated by two large ice fields separated by the deglaciated Sverdrup Pass (79°N). Muskox migrate freely through the 70 km long corridor between the Fosheim Peninsula and some lowlands on the east coast, but large areas of suitable habitat were found unused on the central east coast. Muskox densities in Sverdrup Pass were comparable with those at other arctic sites, as were their reproduction rates (proportion of calves). Vegetated areas (>5% cover) constituted only 5% of the total surveyed land area and were largely restricted to coastal lowlands and the Sverdrup Pass valley.

**DISCIPLINE:** Environmental Sciences/Ecology.

**FIELDWORK LOCATION:** Sverdrup Pass, Ellesmere Island, N.W.T.

86-197 **HIK, D.S.** (1986). Lesser Snow Geese, Herbivory and Production of Vegetation. Paper, National Student Conference on Northern Studies, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**
A lively debate has ensued as to whether herbivory can lead to

increased net primary production of forage plants beyond that of ungrazed plants. The model predicts that net primary production of grazed plants increases at low to moderate levels of hervivory, but at higher grazing intensities production falls.
Captive goslings (Lesser snow goose) have grazed experimental plots of a grass and sedge community in a salt-marsh at La Pérouse Bay, Manitoba. The above-ground biomass in all plots was measured at the start of the experiment, immediately after the period of grazing and 12, 24, and 36 days later the faeces remained in plots. The experiment was repeated on a number of occasions during the summer.
Twenty-four days after grazing, the standing crop of above-ground biomass, was highest at intermediate grazing intensities, such that the net above-ground primary production far exceeded that of ungrazed plots. As the grazing intensity was increased beyond intermediate levels, there was a gradual decline in production. The general form of the experimental curves at 24 and 36 days follows that predicted by the herbivore-optimization model. The plant-herbivore interaction is "successful" because of the ability of the graminoid plants to respond rapidly to the availability of nutrients in faeces.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** La Pérouse Bay, Manitoba.

86-198 **KOTANEN, P.** (1986). The Responses of Sedge Communities to Hervibory. Paper, National Student Conference on Northern Studies, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**
Graminoid communities of the coastal lowlands of Hudson Bay provide forage for both breeding and migrating Lesser Snow Geese. The responses of sedges to herbivory have been investigated at La Pérouse Bay, Manitoba, where there is a colony of approximately 7000 pairs of geese. In the early spring the geese feed intensively on the basal portions of shoots of the freshwater sedges, Carex aquatilis and Carexx flavicans. They discard the remainder of the shoots. By the time the goslings hatch in late June, foraging has shifted to the clipping of leaves of the salt-marsh sedge, C. subspathacea, although leaves of C.x flavicans are also clipped. Both species show a growth response to moderate defoliation. Regrowth of clipped leaves, production of new leaves and a fast turnover of leaves characterize the response. The soluble nitrogen in faeces of the geese appears to be necessary to maintain the growth.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** La Pérouse Bay, Manitoba.

86-199 **MAWSON, B.T.** (1986). Thermal Acclimation of Photosynthesis in Mesophyll and Guard Cell Chloroplasts of the Arctic Plant, Saxifraga cernua. Ph.D. Thesis, Department of Botany.

**ABSTRACT / DESCRIPTION:**
The potential for photosynthetic thermal acclimation for both mesophyll (MCC's) and guard cell chloroplasts (Gcc's) was investigated for Saxifraga cernua. Plants acclimated to 10°C showed higher rates of net photosynthesis, photorespiration and dark respiration at low measuring temperatures compared to plants acclimated to 20°C. Thermal acclimation of the light reactions in MCC's from acclimated leaves was examined by measuring the rates of electron transport through photosystems I and II (PSI and PSII) and through each photosystem separately. MCC's isolated from leaves acclimated to 10°C show higher electron transport rates by both photosystems measured at low temperatures compared to MCC's from leaves acclimated to 20°C. Whole chain electron transport rates at low temperatures appear to be determined more by PSII than by PSI activity. Thermal acclimation of PSII was further examined by measuring the temperature-dependency of the kinetics of chlorophyll fluorescence induction and quenching curves from both MCC's (as leaf discs) and GCC's (as epidermal strips). The inhibition by low measuring temperatures on induction and quenching rates was less for both 10°C acclimated MCC's and GCC's compared to 20°C acclimated chloroplasts.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** Sverdrup Pass, Ellesmere Island, N.W.T.

86-200 **McNULTY, A.K.** (1986). The Alternate Pathway Respiration Capacity of Arctic Plants. Northern Studies Conference, Arctic Working Group, University of Toronto, May 4, 1986.

**ABSTRACT / DESCRIPTION:**
In a survey of several plant species found at Churchill, Manitoba in the transition zone between the low and subarctic regions, we measured respiration in terms of total respiration and alternate pathway respiration rates. Arctic plants exhibit higher rates of total respiration than temperature species. As well, arctic species have higher rates of the alternate (cyanide insensitive) respiration. No energy is conserved as ATP in this alternate pathway which is thus considered to be wasteful. There is a negative correlation between height and alternate pathway activity. Shorter plants have higher rates of alternate pathway respiration. More alternate pathway activity may mean that there is less energy in the form of ATP available for growth. A shorter growth habit keeps these plants in the still air close to the ground. This prevents cooling, water loss and physical damage due to wind abrasion. Thus plants with high rates of alternate pathway respiration may be better adapted to the arctic environment. Respiration

in arctic plants can be understood in terms of temperature, photoperiod and heat dissipation.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** Churchill, Manitoba.

86-201 **NcNULTY, A.K. and W.R. CUMMINS** (1986). The Effect of Photoperiod Length on Respiration in Leaves of Saxifraga cernua L., on Arctic Herb. Research Report, Department of Botany.

**ABSTRACT / DESCRIPTION:**
Rates of oxygen uptake were measured in leaves of Saxifraga cernua which had been exposed to an 18 hour photoperiod. These rates were compared to those in plants which had been exposed to continuous light. Rates of total dark respiration and alternate pathway respiration measured at 20°C gradually decreased over the initial three days of exposure to an 18 hour photoperiod. Thereafter, respiratory rates were constant. Total dark and alternate pathway respiratory rates also decreased during the six hour dark period. Rates of both normal and alternate pathway respiration are equally affected by photoperiod. Three days after the initiation of a dark period the respiratory rates had reached a new minimum level. These results suggest that respiration rates in arctic plants are high because of the long photoperiod in the arctic. The kinetics of photoperiod induced changes in respiration are slow enough to suggest the involvement of the biological clock in setting respiration rates.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** Sverdrup Pass, Ellesmere Island, N.W.T.

86-202 **McNULTY, A.K. and A. PELLIZZARI** (1986). A Field Survey of Respiration Rates in Leaves of Arctic Plants. Paper, National Student Conference on Northern Studies, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**
In a survey of several plant species found at Churchill, Manitoba in the transition zone between the low and subarctic regions, we measured respiration in terms of total respiration and alternate pathway respiration rates. Arctic plants exhibit higher rates of total respiration than temperate species. As well, arctic species have higher rates of alternate (cyanide insensitive) respiration. No energy is conserved as ATP in this alternate pathway which is thus considered to be wasteful. There is a negative correlation between height and alternate pathway activity. Shorter plants have higher rates of alternate pathway respiration. More alternate pathway activity may mean that there is less energy in the form of ATP available

for growth. A shorter growth habit keeps these plants in the still air close to the ground. This prevents cooling, water loss and physical damage due to wind abrasion. Thus plants with high rates of alternate pathway respiration may be better adapted to the arctic environment. Respiration in arctic plants can be understood in terms of temperature, photoperiod and heat dissipation.

**DISCIPLINE:** Botany.

**FIELDWORK LOCATION:** Churchill, Manitoba.

86-203 **RAILLARD, M.** (1986). Grazing Intensity and Grazing Pattern of Muskoxen in Sverdrup Pass (79oN), Ellesmere Island, N.W.T. Poster, National Student Conference on Northern Studies, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**

An intensive study of muskoxen grazing was conducted in a selected portion of Sverdrup Pass in July 1986. The Pass is a deglaciated valley between two major ice fields. It connects the extensive range of muskoxen at Fosheim Peninsula with the vegetated lowlands at the east coast in the Bache Peninsula horseshoe. The valley is fairly vegetated mainly by stands of willow communities and some sedge meadows which suport the migrating herds. The population of muskoxen was 54 animals during the July 17, 1986 census. For the purpose of this study a representative cross-section of the valley (ca. 8 $km^2$) was chosen in the central part of the Pass and a vegetation map of this "Intensive Study Site" (ISS) was outlined. A lookout was established on an elevated but hidden place from which the entire ISS could be observed on a 24 hour basis. The presence, position and activity (grazing, resting, moving) was observed every hour between 8.00 - 22.00 and every two hours between 22.00 - 8.00 and recorded on the map. From the collected data the following information was extracted: The animal migration patterns, preference for plant communities, mean rate of travel, mean occupation time within the ISS and preferred communities. From the beginning till mid- July the animals grazed mainly in the willow stands, later meadows were more utilized. Many stands were visited by the migrating herds repeatedly and grazed intensively. Our observations suggest that the vegetation of the Sverdrup Pass is under severe grazing pressure. However a dynamic equilibrium has been established between muskox population and the vegetation complexes and is maintained by the positive plant - herbivore interactions.

**DISCIPLINE:** Environmental Sciences/Ecology.

**FIELDWORK LOCATION:** Sverdrup Pass, Ellesmere Island, N.W.T.

86-204 **TORRANCE, J.G.** (1986). Structural Geology of Evaporite Piercement Walls and Adjacent Synclines, Axel Heiberg Island, Canadian Arctic Archipelago. M.Sc. Thesis, Department of Geology.

**ABSTRACT / DESCRIPTION:**
The Strand Fiord Area of Axel Heiberg Island is characterized by thin subvertical walls of nodular anhydrite contained within anticlinal buckle folds of clastic strata. Doubly plunging synclines of clastic strata flank the anhydrite walls and have oval to rhomboidal outlines. This pattern of anticlines and flanking synclines is referred to as wall-and-basin structure (WABS). Detailed structural analysis revealed that the nodular "chicken-wire" fabric of the anhydrite is a useful gauge of the cumulative strain of the WABS. The spatial patterns of cumulative strain (k-value) and strain intensity (r-value) within the anhydrite walls can be used as a tool in the determination of the kinematic path. It was thereby determined that the WABS were produced in two stages. The first (Triassic-Late Cretaceous) saw the halokinetic development of first order diapiric ridges in response to geostatic loading. The emplacement of bimodally oriented thin (5400 m) anhydrite walls then followed, and is thought to have been akin to, that of igneous dikes. The second stage was a period of crustal shortening associated with the Tertiary Eurekan Orogeny. This compression produced buckle folds and listric reverse faults, with the pre-existing evaporite walls siting the anticlinal folds. The NW-SE trending set of anhydrite walls buckled about subvertical axes in response to the compression, while the N-S set was flattened.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Axel Heiberg Island, N.W.T.

86-205 **VAN WAGNER, C.E. and A.J. BAKER** (1986). "Genetic Differentiation in Populations of Canada Geese (Branta canadensis). Canadian Journal of Zoology, 64: 940-947.

**ABSTRACT / DESCRIPTION:**
Electrophoretic data for 35 structural gene loci were obtained from 249 individuals in 11 populations of Branta canadensis across North America. Twenty-four loci were polymorphic in at least one population sample, average observed heterozygosity ranged from 0.031 to 0.083, Rogers' genetic distance ranged from 0.014 to 0.063, and Wright's measure of genetic structuring among populations was 0.065. Samples of B.c. minima from willows, California, and B.c. interior from Akimiski Island, Northwest Territories, exhibited both the highest levels of genetic variability within populations and the greatest divergence from other populations. Principal coordinates analysis on the genetic distances, followed by nonmetric scaling in three dimensions and supplemented by construction of a minimum spanning tree, gave a more

informative and less distorted picture of relationships among populations than cluster analysis. Differentiation in structural genes was neither equivalent to morphometric differentiation (in magnitude and pattern) nor consistent with conventional subspecies designations. This suggests that structural genes are selectively neutral in Branta canadensis and are differentiating through random drift, in contrast to morphometric characters which have diverged markedly under different selective pressures.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Akimiski Island, N.W.T.

## TRENT UNIVERSITY

86-206 **ALLAN, C.J.** (1986). Solifluction and its Influence on Water and Soil Chemistry and Vegetative Cover in Small Permafrost Basins. Paper, National Student Conference on Northern Studies, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**
The chemistry of three ephemeral streams which drain into a small, naturally acidified lake located on Axel Heiberg Island (79°25'N, 90°35'W) in the Canadian Arctic Archipelago, was examined during the snowmelt in 1984 and 1985. These streams are typical of those which develop during the snowmelt season in the High Arctic. Their drainage areas range from 0.08 to 0.22 ha, they are situated in an area of continuous permafrost. Spatial differences in stream water chemistry were large with average specific conductance values differing more than five fold (75-600us $^1$) and pH values varying by more than 2.7 units (3.8-6.5) over a distance of less than 100m. Soil stratigraphy generally consisted of a shallow, brown, poorly developed cryosol underlain by a grey-black, highly acidic cryosol that extended to the bottom of the active layer. Disturbance of the upper soil horizons by solifluction, which allowed meltwater to contact the lower soil horizon, appears to be responsible for the observed spatial variation in stream chemistry. Preliminary analysis of vegetation data indicates coverage and species assemblage differences between solifluction scarred and unimpacted basins. Vegetated slopes appeared to export more nutrients (total phosphorus and total organic nitrogen), than non-vegetated slopes.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Axel Heiberg Island, N.W.T.

86-207 **BEARDSALL, K.** (1986). An Experimental Geography Curriculum. Paper, National Student Conference on Northern Studies, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**
The northern school system is frequently criticized by Inuit for its regional and cultural inappropriateness. A project was undertaken by the author to develop an experimental geography curriculum with an information base of Inuit origin. The location of the research for this project was Coral Harbour, on Southampton Island, in the N.W.T. Information was gathered about the Inuk understanding of the atmosphere, the land, the sea ice and other elements of the discipline southerners call physical geography. As was expected, community knowledge in this field was extensive, and the primary objective, in this project, became to survey this resource to determine how it might best be harvested and utilized in a school curriculum. A

map showing Inuk place names and a glossary of Inuk geography are provided as a sample of the achievements of Inuit in geography. The other important element of this inquiry was to gain insight into Inuk teaching and learning practices. It was observed that these methods are very effective and should be used to increase the effectiveness of any curricula in northern schools. The methodology employed, while in the community, involved a high level of cultural integration and a general abandonment of the obtrusive, formal academic procedure.

**DISCIPLINE:** Education.

**FIELDWORK LOCATION:** Southampton Island, N.W.T.

**86-208** **CHAPMAN, A.R.** (1986). Northern River Diversion. Paper, National Student Conference on Northern Studies, Ottawa November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**
While economic gains associated with the damming and diversion of northern Canadian rivers have generally benefited Canada as a whole, there are many consequences detrimental to northern environments and people. This paper briefly surveys the major river engineering projects that have been completed in, or planned for, the Canadian north, and describes some of the associated ecological and social effects. Completed in 1976, the Southern Indian Lake impoundment and Churchill River diversion project diverts 75% (760 $m^{3}.s\ ^{1}$) of the Churchill River flow southward across the natural drainage divide, along 300 km of tributary valleys, and into the Nelson River channel, where a 10,000 MW hydroelectric scheme is being developed. Environmental changes associated with the project include: severe erosion of glacial clay shorelines, which previously existed in permafrost; reduced light penetration in flooded lakes; collapse of the whitefish fishery in Southern Indian Lake; and, increases in fish mercury levels in flooded lakes. Many of the major environmental effects of flooding and diversion were either poorly predicted or completely unpredicted, despite extensive pre-development studies. Associated with the environmental effect were severe socio-economic repercussions for communities along the diversion route. The GRAND Canal Concept, an old proposal which has gained recent support, would turn James Bay into a freshwater lake and divert the water southward. This project, the largest yet proposed for any northern country, has the potential for unpredictable environmental disruption of an unprecedented magnitude. Immediately affected would be 10,000 Inuit living along James Bay, and another 22,000 treaty Indians in northern Ontario.

**DISCIPLINE:** Environmental Sciences/Ecology.

**FIELDWORK LOCATION:** Southern Indian Lake, Northern Ontario.

86-209 **WATSON, S.A.** (1986). An Assessment of Aerial Photographs as a Source for Surrogate Field Measurements of Ice Jams in the Liard/Mackenzie Rivers, N.W.T. M.A. Thesis, Watershed Ecosystems Program.

**ABSTRACT / DESCRIPTION:**
Stereoscopic aerial photographs of six ice jams in the Liard/Mackenzie river confluence (1974-1980) are analysed to assess their applicability as a source for surrogate water level and ice jam field measurements. Considering the many dangers inherent in collecting field data on an ice jam, the development of a stereo-photogrammetric technique for obtaining ice jam measurements becomes an attractive and valuable exercise. Using a Zeiss G-2 Stereocord, surrogate elevation measurements of the ice jam's longitudinal water surface profile are established. The mean of elevation data points within a 2 cm$^2$ grid (400 m$^2$ of river surface) from each stereoscopic model provides the best estimate of the ice jam water level. Elevations are within an average accuracy of ±0.32 m. The estimated profile is used as replacement field data to describe the configuration of the ice jam accumulation, the change in water level and associated backwater effects. The advantages and limitations of the proposed technique are also discussed.

**DISCIPLINE:** Environmental Sciences/Ecology.

**FIELDWORK LOCATION:** Liard/Mackenzie Rivers, N.W.T.

86-210 **WEBSTER, H.A.** (1986). Holocene Land Emergence, Western Simpson Peninsula, District of Keewatin. B.Sc. Thesis, Department of Geography.

**ABSTRACT / DESCRIPTION:**
Immediately following deglaciation at about 9500 BP, the Simpson Peninsula experienced a marine transgression to the extent that the only dry land consisted of peaks found mostly to the southwest, near the present settlement. Because regional rebound was extraordinarily rapid, approximately 75% of total land emergence had occurred by 7000 BP, by which time sea level stood around the present 50 m contour. The +200 m of emergence during that period left extensive raised beach complexes and other sedimentary evidence of former water planes, which were investigated by field, map, and photographic reconnnaissance during August-September 1986. This work has permitted the postglacial marine margin chronology to be established and mapped, showing the transformation of the study area from an archipelago to its present condition of towering

relief and rapidly retreating embayments. Intact shells were discovered in glaciomarine silt at 258 m asl, higher than the 240-250 m asl marine limit previously identified. This suggests that land emergence is slightly greater than first thought.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Simpson Peninsula, N.W.T.

## UNIVERSITY OF WATERLOO

86-211 **BOIVIN, T. and G. POWER** (1986). The Arctic Char Winter Fishery of Kangiqsualujjuaq, Québec. Paper, National Student Conference on Northern Studies, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**
The arctic char (Salvelinus alpinus) is the most important fish species harvested by the Inuit of northern Québec. The Kangiqsualujjuaq (George River) area of eastern Ungava Bay has the highest concentration of char-producing rivers, and many of these are utilized by the Inuit for subsistence and small-scale commercial purposes. Char are captured by local hunters throughout the year, but over one third of the community's catch is taken during the winter months. The winter fishery of the George River Inuit was studied from November, 1985 to April, 1986. The Inuit travel extensively by snowmobile, and more than 1750 km was covered visiting 7 winter fishing areas to sample local catches and observe the fishery. Over 200 hours of interviews with Inuit hunters provided information on fishing methods both past and present, location of char systems, fishing effort, use of the catch and the importance of fishing in the winter lifestyle. The combination of questionnaire survey and field research was found to be a useful technique for monitoring a northern subsistence fishery.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Kangiqsualujjuaq, Northern Québec.

86-212 **CUNJAK, R.A.** (1986). The Winter Biology of Stream Salmonoids. Ph.D. Thesis, Department of Biology.

**ABSTRACT / DESCRIPTION:**
A three-year study of the winter biology of stream-resident brook trout (Salvelinus fontinalis) and brown trout (Salmo trutta) was performed in the Credit River of southern Ontario. Underwater observations were made to describe habitat utilization. Winter behaviour of both trout species suggested a means of minimizing energy expenditure. Trout tended to occupy positions with greater overhead cover and slower focal point water velocities relative to summer position; water depth preferences were similar between seasons. Brook trout, and to a lesser extent brown trout, were often seen in aggregations during winter. This propensity for gregarious behaviour increased as water temperatures declined below 5.5°C. 'Winter warm' discharges from spring-fed tributaries and groundwater seeps served as important overwintering foci. A field manipulation experiment verified the strong cover response by both species in winter; submerged overhead cover was most frequently utilized. Stomach analyses showed that feeding

continued throughout winter. Immature stages of aquatic insects were most commonly consumed. Calculated gastric evacuation rates were slow (57.7-99.8 hours to 99% evacuation). It appears that the early winter acclimatization to rapidly declining temperatures (in conjunction with increasing discharge at this time of the year) is a metabolically costly process for stream trout to overcome.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Credit River, Southern Ontario.

86-213 **DOWNES, C.M., J.B. THEBERGE and S.M. SMITH** (1986). "The Influence of Insects on the Distribution, Microhabitat Choice and Behaviour of the Burwash Caribou Herd". Canadian Journal of Zoology, 64(3): 622-629.

**ABSTRACT / DESCRIPTION:**
This study examined the influence of insects (mosquitoes and oestrids) on the distribution, microhabitat choice, and behavior of a population of mountain caribou. The study was conducted in the Burwash area of southwestern Yukon Territory during the summers of 1982 and 1983. Mosquito density, the presence or absence of oestrids, and the distribution, microhabitat use, and insect-avoidance behavior of the caribou were observed. Seasonal activity budgets for caribou were calculated. Mosquitoes became active in mid-June. Activity decreased with altitude, and at the highest altitudes (2000m) the number of mosquitoes was negligible. Snow patches and exposed windy ridges had fewer mosquitoes than did open tundra. The oestrid season began in late June and lasted until early August. Oestrids were widespread throughout the study area and were present in all microhabitats. Caribou reduced harassment by mosquitoes by their altitudinal movements and use of microhabitat. Oestrids influenced activity budgets of caribou, acting to decrease feeding and resting time and to increase the time spent standing and moving.

**DISCIPLINE:** Zoology.

**FIELDWORK LOCATION:** Burwash, Southwestern Yukon.

86-214 **MEYER, F., G. ASSAF and R. HAAS** (1986). Asphalt Stripping and Thermal Cracking Study Phase III (B): Thermal Cracking. Research Report.

**ABSTRACT / DESCRIPTION:**
Low-temperature cracking of asphalt pavements is a major problem over much of Canada's highway and airports system. Because it results in accelerated deterioration and extra maintenance, the extra costs associated with reduced life and early rehabiliation are substantial.
The Canadian Air Transport Administration (CATA) initiated a

study in 1983 to assess the nature and extent of the problem at Canadian airports, with an eventual goal of modifying design and construction practices to minimize low-temperature cracking. A 1984 report by Haas and Joseph represented the first phase of the study. The second phase consisted of condition inventory, data acquisition and core sampling at 26 selected airports with a range of cracking history, climate, construction year and other factors. Results of the analysis of Phase III lead to the following major conclusions:
1. Low-temperature cracking at airports is significantly affected by the temperature susceptibility of the Bitumen (or the mix), the thickness of asphalt layer, minimum temperature reached and the coefficient of thermal contraction of the mix.
2. Models developed from the data base for the 26 airports, can estimate low-temperature cracking with reasonable reliability for design purposes.
3. The CGSB specifications and recommendations suggest that softer and/or higher quality (i.e., less temperature susceptible) asphalts should have been chosen for most of the airports. However, because of deformation resistance requirements at summer temperatures, somewhat harder asphalts (with an acceptance of some degree of cracking) may be necessary. This requires a design "tradeoff" between low-temperature and higher temperature design and associated economic considerations.
4. Riding Comfort Index, RCI, is significantly affected by low-temperature cracking, asphalt layer thickness, frost susceptible subgrade materials, quality of drainage, annual rainfall and freezing index. Because the first four of these factors are subject to design and/or construction control, and because of the substantial savings associated with higher levels of RCI, it is possible to achieve major economic benefits through better design and construction practices.

**DISCIPLINE:** Engineering.

**FIELDWORK LOCATION:** Canadian North.

86-215 **SMITH, P.G.R. and J.B. THEBERGE** (1986). "Evaluating Diversity in Environmentally Significant Areas in the Northwest Territories of Canada". Biological Conservation, 36: 1-18.

**ABSTRACT / DESCRIPTION:**
A method is developed to evaluate the biotic diversity of candidate environmentally significant areas (ESAs) in the Northwest Territories (NWT) of Canada. The method is part of an evaluation system based on five ecological criteria and linked to analyses of cultural heritage areas, land use and potential management arrangements. Data vary in quantity and quality among ESAs, creating sampling effort bias. To remedy this, we test the use of the number of 'conspicuous' vertebrate species as an index of overall vertebrate faunal diversity. For the same reasons we examine the relative merits of three

measures of floristic diversity--number of species, genera and families. To correct for the effect of ESA size, regression is used to estimate the expected number of taxa. The number of species greater or less than expected is calculated and used as a diversity index corrected for area. The range of values of diversity are then partitioned into high, average and low ordinal categories of diversity. The method is tested on candidate ESAs in the Great Bear Lake-Eastern Beaufort Sea region of the N.W.T. The technique is discussed in terms of minimizing sampling effort bias, correction for area and latitudinal effects, usefulness in evaluating ESAs and its practicality.

**DISCIPLINE:** Environmental Sciences/Ecology.

**FIELDWORK LOCATION:** Great Bear Lake, N.W.T.

86-216 **THEBERGE, J.B.** (1986). "St. Elias, our Highest, Youngest and Iciest Mountains." Canadian Geographical Journal, 105(6): 36-45.

**ABSTRACT / DESCRIPTION:**
The Icefield Ranges, highest in the Yukon's St. Elias Mountains, are the most extensive glacial environment in the world's temperate regions. Here are found the mountain giants of North America.
The St. Elias Mountains provide a place to ask questions about the forces of nature and seek answers in science, a place to find adventure with crampon or ice pick or backpack, a place to watch grizzlies gallop across tundra and Dall sheep crash head-to-head in rutting display. It is a place to marvel at overpowering scenery, and to capture it on film. Above all, it is a place which puts man in perspective, and which humbles him before the forces and beauty of nature.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** St. Elias Mountains, Yukon.

# UNIVERSITY OF WESTERN ONTARIO

86-217 **De FREITAS, T.** (1986). The Carbonate Platform-Basin Margin and Contiguous Sponge Biostroms of East-Central Cornwallis Island, Canadian Arctic. M.Sc. Thesis, Department of Geology.

**ABSTRACT / DESCRIPTION:**
From latest Ordovician to latest Silurian, portions of east-central Cornwallis Island straddled a basin-platform transition. During this time, basinal Cape Phillips shales were deposited over Ordovician platform carbonates while, in part contiguous Alle Bay/Cape Storm sediments were laid down on the adjacent platform. At the slope-basin transition, slope sedimentology indicates that the margin profile during Allen Bay time was relatively subdued in contrast to the rather abrupt transition during Cape Storm deposition. The change from an 'immature' (Allen Bay) to a 'mature' (Cape Storm) profile is perhaps a manifestation of progressive platform-margin growth over contiguous basinal sediments subsequent to differential platform subsidence during the upper Ordovician. In the time-equivalent well-exposed slope sediments, frequency of olistostromes and size of allochthonous blocks reflect contiguous platform evolution from ramp-like to escarpment-like profiles. Opportunistic sponge communities nucleated on thin turbidites beds in Cape Storm slope sediments, periodically suffering the effects of a allochthonous debris flux. Preservation of the predominantly anthaspidellid sponge communities is superb, and hundreds of specimens were collected for the taxonomic study herein. Nineteen new species and five new genera are proposed. New taxa predominantly belong to orchocladinid lithistids, but one sphaerocladinid, two hexactinellids, and one sphinctozoon are also proposed. Anthaspidellid evolution and generic distinction in the anthaspidellids and the stiodermatids are also discussed.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Cornwallis Island, N.W.T.

86-218 **HEYES, A.** (1986). Paleo-Environmental Record Preserved in Holocene Palsa, Devon Island, N.W.T. Paper, National Student Conference on Northern Studies, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**
Glacio-isostatic rebound over the last 10,000 years in the vicinity of Truelove Inlet, Devon Island has resulted in the creation of an area of emerged coastal lowlands containing a sequence of raised beaches and interdigitated lakes. In places, the progressive accumulation of organic and inorganic

sediments within these lakes has led to the formation of ice-cored palsa when the lakes were uplifted and drained. Given the age of these palsa the possibility exists that the former lacustrine sediments contain a record of much of the environmental change that has occurred within the coastal lowlands during the Holocene. The major objective of this study is to examine the record of Holocene paleo-environmental changes preserved in these sediments through an investigation of the pollen spectra and sediment geochemistry. To this end three palsa were cored in the coastal lowlands during the summer of 1986 using a Livingstone piston corer. Located at elevations of 6.8 m, 29.8 m and 56.5 m AMSL and based on published isostatic rebound curves for the area, the palsa are estimated to have begun forming approximately 4,000 7,400 and 8,500 years ago respectively. The longest core, with a length of 2.62 m, was obtained from the highest palsa which has also yielded a basal date of 6.900 ± 115 years B.P. (S-428). Analysis of the cores is presently underway, beginning with the determination of sediment pH, carbonates, rare earth elements, and trace elements on increment samples from each of the cores.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Devon Island, N.W.T.

**86-219** **KELLY, P.** (1986). Soil Development on a Chronosequence of Raised Beaches, Truelove Lowlands, Devon Island, N.W.T. Paper, National Student Conference on Northern Studies, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**

A chronosequence of soils is located on a series of raised beaches in the Truelove Lowland, Devon Island, NWT. These raised beaches, ranging in age from the present to approximately 9,500 years B.P. have formed in response to isostatic uplift of the lowland following the conclusion of the last Ice Age. These beaches provide an excellent chronological dating control and the ages of many have previously been determined using C-14 dating techniques on whalebone, driftwood and basal peat. Thirteen additional whalebone samples were obtained in the summer of 1986 and await dating. 288 bulk soil samples were collected from 96 pits on 24 of the raised beaches along two transects stretching form the present coastline to the upper marine limit. Three samples were obtained from each beach at three depths. These samples are currently being analyzed for such properties as pH, percent total nitrogen, sand, silt and clay, organic carbon, exchangeable bases and extractable Fe and Al. The analytical results will be subjected to an analysis of variance to determine variances attributable to differences in the ages of the sites, and in depth, together with variances on individual beaches, thus providing a better understanding of the temporal and spatial variation of soils and soil forming processes in this area of the High Arctic.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Truelove Lowlands, Devon Island, N.W.T.

86-220 **LAW, K.** (1986). Post-Glacial Coastal Emergence, Devon Island, Canadian Arctic Archipelago. Paper, National Student Conference on Northern Studies, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**
In post-glacial times the northeastern coast of Devon Island, NWT experienced considerable glacio-isostatic rebound. Approximately 9,500 years B.P. deglaciation of the area was accompanied by a marine transgression which covered the coastal lowlands up to an elevation of approximately 80 m AMSL. Subsequent glacio-isostatic rebound associated with the diminishing extent and thickness of the local Devon Island Ice Cap has continued until the present day and has been accompanied by an apparently continuous marine regression. The result has been the progressive emergence of the coastal lowlands in the vicinity of Truelove Inlet and the creation of a set of raised beaches which rise in elevation from the present-day shoreline to the former marine limit. Through a detailed topographic survey based on an arbitrarily selected datum, the elevation of each identifiable raised beach has been established and mapped. With the aid of a calibration curve representing the rate of post-glacial coastal emergence and which takes into account the known changes in sea-level, as well as the height and radiometric ages of the raised beaches, the respective raised beach elevations have been converted into a series of isochrones. The result is a reconstruction of the progressive changes in the coastline of northeastern Devon Island during much of the Holocene.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Devon Island, N.W.T.

86-221 **LENZ, A.C. and M.J. MELCHIN** (1986). "A Synrhabdosome of Saetograptus fritschi cf. linearis (Boncek) from Cornwallis Island, Arctic Canada". Canadian Journal of Earth Sciences, 23: 1854-1857.

**ABSTRACT / DESCRIPTION:**
The occurrence of rare synrhabdosomal structures of graptolites has been recognized for many years. Ruedemann (1947), in particular, illustrated synrhabdosomes of various taxa, all diplograptids. Rickards (1975), however, questioned the validity of the vesicular, float-like structures in the Ruedemann material examined by him. Rickards (1975) and Jackson et al. (1976) illustrated synrhabdosomes of monograptids, and Bjerreskov (1976) described several for Rhaphidograptus. The case of Rhaphidograptus, however, is a

departure from the apparent norm; whereas in all other examples of synrhabdosomes the distal--virgular ends of individual graptolites from the central radial mass, that in Rhaphidograptus is formed from the opposite, virgellar ends (Bjerreskov 1976). A single synrhabdosome of Saetograptus fritschi cf. linearis (Boucek) was collected from Rookery Creek, northwestern Cornwallis Island (75°22'46"N, 95°37'38"W). The fauna comprises large numbers of loose specimens of well-preserved S. fritschi cf. linearis, in addition to the synrhabdosome, and a relatively smaller number of Bohemograptus bohemicus tenuis (Boucek), an association similar to that illustrated in Jackson et al. (1978). The fauna is almost certainly about mid-Ludlow in age.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Cornwallis Island, N.W.T.

86-222 **MELCHIN, M.J. and A.C. LENZ** (1986). "Uncompressed Specimens of Monograptus Turriculatus (Barrande, 1850) from Cornwallis Island, Arctic Canada". Canadian Journal of Earth Sciences, 23: 579-582.

**ABSTRACT / DESCRIPTION:**
Isolated specimens of Monograptus turriculatus (Barrande, 1850) have been recovered from calcite concretions of the turriculatus Zone (late Llandovery) from the Cape Phillips Formation, Canadian Arctic Islands. The sicula shows ventral as well as dextral lateral curvature, and the thecae show a pronounced lateral asymmetry. This asymmetry is manifest as a tear-shaped aperture, a long, laterally directed spine on the outer apertural margin, and a shorter, ventrally directed spine on the inner apertural margin. The latter spine is totally absent on the proximal thecae. Monograptus sedgwickii (Portlock, 1853) is suggested as a possible ancestor to M. turriculatus.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Cornwallis Island, N.W.T.

86-223 **YOUNG, R.B.** (1986). Retrieval of Cores for Diatom and Geochemical Analyses from Five High Arctic Lakes, Truelove Lowlands, Devon Island, N.W.T. Paper, National Student Conference on Northern Studies, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**
Truelove Lowland (75°33'N 84°40'W), Devon Island is a high Arctic 'oasis' which has undergone isostatic rebound for the past 10,000 years. As a result, the lowland is typified by a series of raised beaches separated by wet meadows and lakes which represent former littoral zones. The purpose of this

project is to use diatom and geochemical information obtained from the sediments of lakes at different elevations in order to reconstruct the evolution of the Truelove Lowland. Diatoms will be used to delineate salt water/fresh water transition and any subsequent marine transgressions. The relative abundance of chemical elements within the sediments will be used to identify: erosional environments (K, Na, Al, Ti), soil leaching (Cl, B) and organic productivity (biogenic Si, Mn, Fe).
Five lakes in the lowland region were sampled. Cores were taken through a hole drilled in the lake ice using a Livingstone corer. Sediments were extruded and subsampled in 20 cm units. Average core length was 65.5 cm. Further subsampling to 2 cm units was completed at the base camp prior to shipment to prevent liqui-faction of the samples.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Truelove Lowlands, Devon Island, N.W.T.

86-224 **YOUNG, R.B. and A. HEYES** (1986). Paleolimnology and Palynology of Truelove Lowland, Devon Island, N.W.T. Paper, National Student Conference on Northern Studies, November 18-19, Ottawa.

**ABSTRACT / DESCRIPTION:**
An investigation of the paleoenvironmental record preserved in the surficial sediments in Truelove Lowland, Devon Island, N.W.T. is presently underway. Glacioisostatic rebound over the last 20,000 years has resulted in an emerged coastal lowland containing a number of large lakes separated by a sequence of raised beaches. Isochrones based on precisely determined height and radiometric age determinations of the beaches depict the progressive emergence of the Lowland from the sea over time. Holocene soil development on these beaches is being studied through an analysis of variance of the soil physical, chemical and site characteristics. In places, the progressive accumulation of organic and inorganic sediments within the lakes has led to the formation of ice-cored palsa when the lakes were uplifted and drained. Cores have been obtained using an ice-corer from two palsa in the Lowland and one palsa in the Truelove Valley with a basal date of 6,900 ± 115 years B.P. Lacustrine sediment cores have also been obtained using a modified Livingstone piston corer from four large lakes in the Truelove Lowland and one lake on the interior plateau to the east of the Lowland. The record of Holocene paleoenvironmental changes preserved in these sediments is being examined through an investigation of the pollen spectra and sediment

geochemistry. It is believed that the soils and former lacustrine sediments contain a record of much of the environmental change that has occurred within the coastal lowlands during the Holocene.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Truelove Lowland, Devon Island, N.W.T.

86-225 **BEATON, M.J. and P.D.N. HEBERT** (1986). Further Evidence of Hermaphroditism in Lepidurus arcticus (Crustacea, Nostostraca). Report.

**ABSTRACT / DESCRIPTION:**
Populations of the arctic notostracan crustacean, Lepidurus arcticus, typically show skewed sex ratios with females outnumbering males by a ratio of 100:1. The breeding strategy employed by this species has been a topic of controversy with the lack of males being attributed to either asexual reproduction or to hermaphroditism. To resolve this controversy, patterns of allozyme diversity and sex ratios were studied in populations of L. arcticus at three sites on the Melville Peninsula. Samples from four of the Igloolik populations were collected at regular intervals to study growth rates and determine sex ratios. The incidence of males at Igloolik averaged 3.4% of the total population.
Enzyme electrophoresis was used to determine and compare the extent of frequency differences at allozyme loci within and between populations. Fifteen enzyme loci were examined for all populations and an additional 10 loci were examined in a subset of the populations. The survey failed to reveal any genetic polymorphism suggesting that the species is a self-fertilizing hermaphrodite, and that the area under study has been colonized by a single lineage.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Melville Peninsula, N.W.T.

86-226 **BOILEAU, M.G. and P.D.N. HEBERT** (1986). Biochemical Differences between Two Related Species of Leptodiaptomus (Copepoda). Paper, National Student Conference on Northern Studies, Ottawa, November 17-19, 1986.

**ABSTRACT / DESCRIPTION:**
The distinctiveness of the calanoid copepods Leptodiaptomus tyrrelli Poppe 1888 and L. pribilofensis Juday and Muttkowski 1915 has been questioned since the latter taxon was described. L. tyrrelli is widely distributed in montane and low arctic habitats, while L. pribilofensis is most common in Alaska and northwestern Canada. Cellulose acetate electrophoresis was used to estimate the amount of genetic divergence between these two taxa because of its proven utility on very small organisms. The genetic identity (I) was determined by the analysis of 11 enzyme systems representing 18 presumptive loci. The estimate of I from comparison of over 400 individuals indicated a genetic identity of 0.76 between the two taxa and revealed the presence of 5 diagnostic enzyme loci. Such marked divergence

strongly suggests that L. tyrrelli and L. pribilofensis are distinct taxa.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Churchill, Manitoba/Igloolik, N.W.T.

86-227 **HEBERT, P.D.N. and J.M. LOARING** (1986). "Systematics of the Daphnia pulex Group: Variation in an Agamic Complex and Description of a Species New to North America". Biochemical Systematics and Ecology, 14: 333-340.

**ABSTRACT / DESCRIPTION:**
A survey of genotypic diversity at 10 polymorphic enzyme loci in 855 isolates of Daphnia from three sites in northwestern Canada revealed a total of 46 genetically different clones. Three of these clones were identified as D. curvirostris and represent the first record of this taxon for North America. The remaining clones showed a continuous gradient of phenotypes from typical D. pules to D. schodleri. These clones were shown to reproduce by obligate parthenogenesis, suggesting that the two 'species' are members of a single agamic complex.

**DISCIPLINE:** Biology.

**FIELDWORK LOCATION:** Old Crow, Yukon; Inuvik, Tuktoyatkuk, N.W.T.

86-228 **OBRADOVIC, M.M.** (1986). An Isotopic and Geochemical Study of Runoff in the Apex River Watershed, Baffin Island, N.W.T. M.A. Sc.

**ABSTRACT / DESCRIPTION:**
Recent research in temperate, humid environments has indicated that groundwater is a much more important and active factor in the precipitation-runoff process than was previously thought. The main objective of this research project has been to determine the importance of groundwater in snowmelt and rain runoff in a catchment underlain by permafrost. In order to meet this objective, isotopic ($^{18}O$) and chemical (ED, Mg and Ca) parameters were used for hydrograph separations of snowmelt and rain runoff and standard hydrologic analyses were run on streamflow data for the Apex River watershed near Frobisher Bay (Iqaluit), NWT. This basin is a small (60 $km^2$) watershed situated in the continuous permafrost zone where the bedrock is mostly Precambrian gneiss and glacial overburden is sparse. Peak flow frequency analysis for the Apex River yielded results similar to those of comparably sized watershed in southern Canada. Flow duration curves for 1982 and 1983 suggest that runoff in the Apex river watershed is dominated by overland flow. The recession analyses (1982 and 1983) resulted in large recession constants. The long recessions are likely a result

of the increased storage capacity of the thawing active layer during the summer.

**DISCIPLINE:** Geology.

**FIELDWORK LOCATION:** Iqaluit, N.W.T.

86-229 **STAVINGA, J.M.W.** (1986). Physio-chemical Evaluation of Water in Tundra Ponds and Precipitation Samples from Frobisher Bay, N.W.T. B.A. (Honors) Thesis, Department of Geography.

**ABSTRACT / DESCRIPTION:**
It is increasingly evident that regions that were once considered far removed from any direct source of anthropogenic pollution are now becoming susceptible as these pollutants are transported throughout the atmosphere to remote areas. An assessment of the susceptibility of arctic tundra ponds in the vicinity of Frobisher Bay (Iqaluit) to contamination via the atmospheric transport of pollutants was conducted during July 1985. This was achieved through the collection and the analyses of surface water samples from several large tundra ponds as well as precipitation samples from the community of Frobisher Bay. Additional samples were collected from Nettilling Lake and the surrounding area for comparative purposes. The chemical analyses of the surface water samples from Frobisher Bay revealed low alkalinity values indicating a relatively low capacity to resist acidification. Analyses of bulk precipitation from Frobisher Bay and Nettilling Lake showed detectable levels of lead and cadmium. These heavy metals were not detected in the surface waters sampled however, since these metals are insoluble it is more probable that they would be found in the sediments.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Iqaluit, N.W.T.

86-230 **VERMETTE, S.J. and V.G. BINGHAM** (1986). "Trace Elements in Frobisher Bay Rainwater". Arctic, 39: 177-179.

**ABSTRACT / DESCRIPTION:**
Using short-decay instrumental neutron activation anaylsis, concentrations of the trace elements Al, Br, Ca, Cl, Cu, I, Mg, Mn, Na, and V were determined in rainfall sampled from Frobisher Bay (Iqaluit), N.W.T., during three weeks in the summer of 1984. Detectable concentrations were reported for

all ten elements. Enrichment factors revealed that concentrations generally represent either crustal or oceanic natural background levels.

**DISCIPLINE:** Physical Geography.

**FIELDWORK LOCATION:** Iqaluit, N.W.T.

86-231 **AIRD, R.** (1986). Limitations on Impact Assessment as a Tool for 'Balanced' Development in the North: Lessons from the Beaufort Environmental Assessment and Review Process. M.A. Thesis, Faculty of Environmental Studies.

**ABSTRACT / DESCRIPTION:**
Environmental impact assessment (EIA) was an institutional response to a strongly felt need to alter the basis on which development decisions were being made. At opposite ends of a spectrum EIA can be viewed as an information gathering exercise with an emphasis on substance, or as a decision-making process which involves open debate, thereby creating the opportunity to question the values and policies that underlie existing approaches to development. The way in which EIA is perceived defines the type and scope of problems addressed. Using the Beaufort EARP as a case study, this paper examines three sets of limitations on EIA as a tool for balanced development in the North: lack of planning context: constraints on scientific prediction and assessment; and distortion of public participation.

**DISCIPLINE:** Environmental Sciences/Ecology.

**FIELDWORK LOCATION:** Beaufort Sea, N.W.T.

86-232 **LOURIE, B.** (1986). Northern Mineral Resource Decision Making Policy: A Case Study of the Faro Mine. M.A. Thesis, Faculty of Environmental Studies.

**ABSTRACT / DESCRIPTION:**
The Faro Mine (ex-Cyprus Anvil Mine) has resumed production in the Yukon after a four year shut-down. The mine is the single largest employer in the Territory. Depressed metal prices combined with high operating cost forced the shut-down. Now under new ownership, a number of significant changes have been made permitting economic recovery of the ore. Through a series of interviews with the various parties involved, data has been gathered in an attempt to analyse the complicated nature of northern resource decision-making. A multidisciplinary approach has been adopted to understand the economic, social, political and environmental implications of re-opening the mine. Four key issues have been identified, each of which had to be resolved in order for the mine to re-open: 1) Reduced power rates had to be negotiated with the Northern Canada Power Commission. 2) Changes to the water licence were necessary revoking the existing mine abandonment plan. 3) A more economical mode of transportation was required. 4) Labour costs had to be reduced significantly. The resolution of each issue required a considerable amount of political involvement, including the services of many government departments at

various levels of government. Several viewpoints are explored, with the majority favouring the mine re-opening.

**DISCIPLINE:** Environmental Sciences/Ecology.

**FIELDWORK LOCATION:** Faro, Yukon.

86-233 **MacLACHLIN, S.** (1986). The Future of Parks Canada North of 60. M.A. Thesis, Faculty of Environmental Studies.

**ABSTRACT / DESCRIPTION:**
The paper looks at northern National parks in the context of conservation and discusses Auyuittuq National Park Reserve as a case study. Parks Canada's involvement North of 60 currently comprises the three reserves of Auyuittuq, Kluane, and Nahanni and Northern Yukon National Park. Althrough Parks Canada has plans to establish at least fifteen more parks in the North, the paper argues national parks may not provide the best protection for our northern wilderness. The National Parks Act (1930) is designed to meet both public use as well as to serve as a means of preservation. Auyuittuq National Park Reserve (ANPR), located almost entirely within the Arctic Circle, is Canada's northernmost park. By using ANPR as a case example, it is demonstrated that other conservation initiatives such as ecological sites and wildlife areas would be better suited to satisfying the unique conservation objectives of Northern Canada.

**DISCIPLINE:** Environmental Sciences/Ecology.

**FIELDWORK LOCATION:** Auyuittuq National Park Reserve, N.W.T.

86-234 **McROBERT, D.** (1986). Attitudes About Sustainable Development in the Yukon. M.A. Thesis, Faculty of Environmental Studies.

**ABSTRACT / DESCRIPTION:**
In June 1986 the Yukon Territorial Government (YTG) released a draft discussion paper on prospects for a more sustainable economic development policy entitled Yukon 2000. The ideas in that document and several other recent initiatives in the areas of renewable resource management and import substitution provided the inspiration for this research. The aim of the study was to determine whether these recent policy initiatives were understood and supported by Yukoners. A questionnaire was designed and thirty policy-makers, opinion-formers and "stakeholders" in government, industry, the native community and environmental groups were interviewed in July and August of 1986. This paper surveys some of the preliminary results obtained in the study.
The results suggest that respondents believe that Yukoners support measures such as import substitution. In addition, most of those interviewed believe that a slower pace of both

economic development and population growth is preferable because this would allow Yukoners to maintain greater control over key decision-making processes and reduce the impact of the boom and bust cycle. However, it was also clear that a wide discrepancy existed over the interpretation of certain key aspects of the YTG initiatives and this, in turn, indicates that the YTG should increase public education activities to inform Yukoners about the different policy options related to the Yukon 2000 project specifically and sustainable development in more general terms.

**DISCIPLINE:** Environmental Sciences/Ecology.

**FIELDWORK LOCATION:** Yukon.

86-235 **PAWLOWSKI, D.** (1986). Draft Agreement on Northern Land Use Planning - Yukon. Paper, National Student Conference on Northern Studies, Ottawa, November 18-19, 1986.

**ABSTRACT / DESCRIPTION:**
The Yukon Territory does not have a specific frame-work for an environmental assessment process, only a number of prohibition and approval systems for environmental protection and some limited assessment procedures. Three major review and approval systems in Yukon that contain assessment procedures are critiqued (the federal Environmental Assessment and Review Process (EARP), the water use, and the land use permitting and approval systems). These are found to be lacking, unable to deal effectively with issues relating to environmental protection and natural resource development, and do not suggest a comprehensive evaluation process that explicitly considers the social, cultural, economic and ecological effects of an undertaking prior to decision-making. An argument is made in support of a regional environmental assessment mechanism for the Yukon Territory.

**DISCIPLINE:** Environmental Sciences/Ecology.

**FIELDWORK LOCATION:** Yukon.

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